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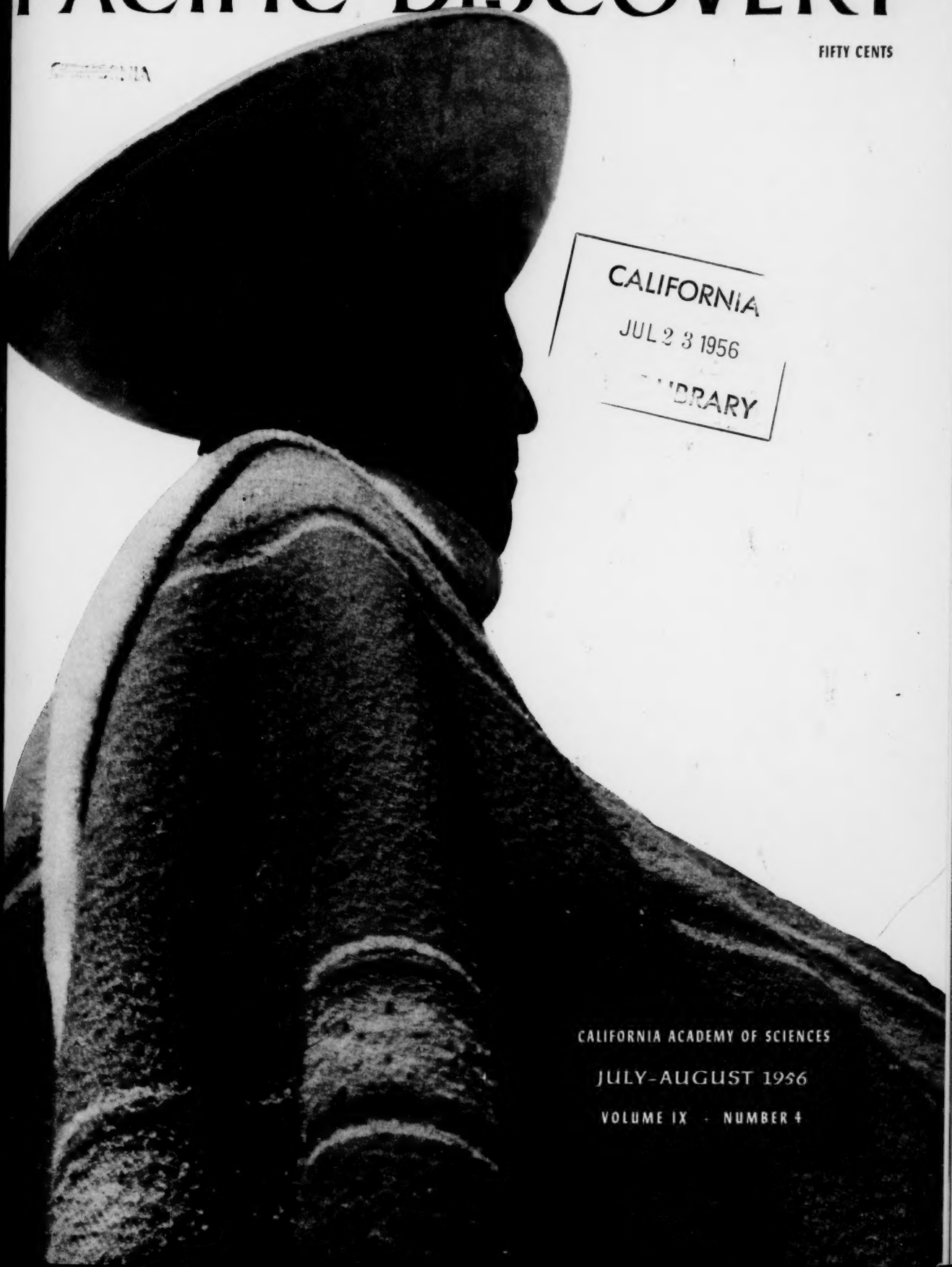

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PACIFIC DISCOVERY

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PRE-DISCOVERY

"ON DISCOVERING DISCOVERIES" might have been as good a title as "Sagas of Discovery" for our May-June editorial. Columbus *re*discovered America, we now know through the historians' rediscovery of evidences of *pre*discovery—well, before we get involved, our purpose here is to note our discovery of an important book which comes to the very nub of our theme. More than any other, Hjalmar R. Holand may be credited with bringing the controversial Kensington Stone into the arena of scholarship where specialists in every pertinent field have for nearly fifty years stubbed their toes and bruised their shins on it, until it has at last been accepted by the Smithsonian as a document of American history. Himself a scholar in Scandinavian-American history, Mr. Holand has written *The Kensington Stone* (1932), *Westward From Vinland* (1940), *America, 1355–1364* (1946), and now *Explorations in America Before Columbus* (Twayne Publishers, New York, 1956 – see note, facing p.32, this issue). Notice of the last did not reach us until after publication of *PD's* May-June issue—we now hasten to put a foot-note to the editorial suggesting Mr. Holand's newest book for further reading. Whether or not you accept the thesis that not only is the Kensington rune-stone genuine proof that "8 Goths (Swedes) and 22 Norwegians on an exploration journey from Vinland" did indeed penetrate western Minnesota by water from Hudson Bay in the year 1362, but that it is backed up by very strong evidence of an expedition having sailed from Norway in 1355 under royal commission to search for the lost Western Settlement of Greenland, you will find the book an exciting exercise in tracing missing links of history. Chances are you will agree, when Mr. Holand rests his case, that it is squarely up to counsel for opposing schools of thought to prove that no such nine-year expedition (1364 is the year postulated for the homecoming of its survivors) ever took place, on top of continuing to hold in the face of competent authority that the inscription found near Kensington, Minnesota, is after all, a preposterous fraud.

Two other items have some pertinence to this issue, both from Houghton, Mifflin of Boston, a new (1955) edition of *The Journey of the Flame* which, while a novel, is firmly enough based on historical and geographical fact to be first-rate reading on Spanish colonial life in the Californias; and a novel by California's George R. Stewart, *The Years of the City* – call it archeology in reverse, perhaps: the life of an imagined Greek colony from its founding to its sacking.

PD'S AUTHORS

FROM QUITO, Ecuador, **Miss Lillian Robinson Pérez** writes of customs old in the Pacific world when Pizarro hit the Inca Road—ways of life conquest could change little, let alone destroy. . . . ¶ From Tucson, Weldon F. Heald and his wife Phyllis range over the Western states on the alert for scenic areas deserving to be better known or to be saved from some threat of destruction. . . . ¶ Teacher of history in San Francisco's Balboa High School, **Miss Dorothy Reynolds** has developed through extensive travel as well as study a good working knowledge of Latin American history. . . . ¶ Last time we saw **Dr. Raymond M. Gilmore,** U.S. Fish & Wildlife biologist at Scripps Institution of Oceanography, La Jolla, he was expertly wielding a flensing knife atop a 43-foot humpback whale in the San Francisco Bay whaling station of the Del Monte Fishing Company. . . . ¶ **Annette H. Richards** is another of our growing corps of southwestern contributors, of Tucson. . . . ¶ As assistant curator in ethnology at the Museum of New Mexico, Santa Fe, **Miss Vorsila L. Bohrer** has been closely associated with the "Youth in Science" activity of which she writes. Though the Girl Scout program she describes is for the development of young women, science benefits —a little in work done, a lot in understanding and appreciation set astir in young minds. . . . ¶ We wish to thank Professor John McGloin, S.J., of the University of San Francisco, and Professor Aníbal Buitrón of the Pan-American Union, Washington, D.C., for their kindness in checking some of the material in this issue. D.G.K.

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EDITORIAL

Junípero Serra, Founding Father on Foot

ABOUT ONE A.M. on November 24, 1713 at the town of Petra on the small Mediterranean island of Mallorca, something happened which held the improbable destiny of being incalculably important to a great nation not yet born and in particular a part of its lands still largely undiscovered.

At that time and place the wife of Antonio Serre, a pious laborer, gave birth to a son, baptized Miguel José. From the first, the boy was attended by improbabilities. Very small and seemingly frail, he was yet one of only two of the Serres' five children to reach maturity. He grew in mind and character, shone in his studies, and at 16 applied for admission to the Franciscan Order. The fathers turned him down: he was too puny for the rigorous monastic life. But his teachers plead his worth; and after a year of probation Miguel José took the vows and the name of Brother Juniper, companion to St. Francis of Assisi. Destiny had during that year again chosen among improbables and turned its face toward a distant coast – the novice had read the life of St. Francis Solano, and dreamed he too would go out to convert Indians in the Americas.

Destiny turned, but was slow to move. Seventeen years later Fray—now Padre—Junípero was teaching dogmatics at the University of Palma, still on his native island. His superiors valued him too highly to let him go. His old missionary resolve needled him with remorse, as he confided to his intimate colleague, devoted follower, and future biographer, Fray Francisco Palóu.

It was time for destiny to take things in hand. In 1748 a recruiting officer came to Spain from the Franciscan "apostolic college" of San Fernando de México —many savage Indians still troubled New Spain. Junípero and Francisco secretly resolved to go; Junípero nudged fate by writing in their joint behalf to the Commissioner of the Indies. But the San Fernando quota was filled; of the 33 some would have to back out before sailing time. Some did; five inlanders decided, on seeing the sea and the tiny ship, "to continue their quest for salvation on dry land." A message was rushed to Junípero. His Provincial at the university intended to pass it on to him—after the ship was safely at sea. He would keep his doctor of theology in the chair another ten years. . . .

The faithful Palóu intercepted the next urgent message. So on April 13, 1749 destiny had its way: Junípero Serra* and Francisco Palóu sailed from Mallorca. As they left Palma, Fray Rafael Verger and Fray Juan Crespi slipped the word to Junípero to get their names on a replacement list—the name of Crespi stands with those of Serra, Palóu, and Lasuen in the history to which our story is prelude.

*"The Majorcan *Serre* becomes *Serra* in Catalan and *Sierra* in Spanish. At first Junípero signed himself 'Serre,' then 'Sierra' and finally 'Serra.'"—Omer Englebert.

The sea did its best to thwart destiny. The brutal English captain of the freighter that took them to Málaga hated Spanish monks, and almost strangled the slight Junípero to death in an argument over the Bible. They finally sailed from Cadiz on August 29. One hundred days to Veracruz, the *Villasota* made for the reefs at Puerto Rico and almost broke up in a storm off the Mexican port. Serra alone kept calm. "You are not afraid?" Palóu asked. "I was a little afraid at the beginning," Junípero confessed, "but the thought of the ideal that is leading us to the Indies got the better of my fright at once." Junípero was always ready to give his fate a helping hand.

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Or a helping foot. Why wait for the mule-train when Mexico City was only 260 miles and four mountain ranges away? Dogged by hunger and thirst, Junípero on this heroically foolhardy hike got the scorpion bite that crippled his leg for life—one of nature's least, but oldest, creatures thus added enormously to the sheer improbability of Father Serra's surviving to accomplish his major life's work: several times he all but died of the lifelong effects.

For another twenty years destiny was put off. Serra and Palóu labored among the barbaric Pamés in Mexico's Sierra; then for nine years Junípero took the Gospel to wild southern Mexico, on foot and often in physical danger. Then it came—destiny's decisive turn. "The date of July 14, 1767," Abbé Omer Englebert tells us in his marvelously fresh and inspiring biography *The Last of the Conquistadors: Junípero Serra* (to which we happily acknowledge our debt for both inspiration and material for this bit), "may be fixed as that upon which Junípero Serra entered upon the historic role he had been called upon to play: it was on this day that he set out for Tepic and Lower California."

The Jesuits were being thrown out of New Spain. Franciscans were to take over the California missions. But Serra spent only a year on the peninsula. "It would seem," Englebert says, "that he went to Lower California only to found the California of the the North." The rest—a scant outline of it, that is—we have read in our history books: the expeditions prepared by Visitor General Galvez; Serra's march north to meet the ships at San Diego; the virtual ruin of everything through disease and starvation at that key point; Portolá's decision to retreat, Junípero's resolve to stay vindicated at the last moment by the return of the *San Antonio*, which then took Serra to Monterey and the founding of San Carlos, his second mission.

But the full story of Serra's career, especially of the final 15 years in California, as compellingly—often humorously, and always sympathetically—told in Abbé Englebert's incomparable new biography, leaves one marveling in something like awe at the spirit of this

(Continued on page 32)

LILLIAN ROBINSON PÉREZ

THE ROAD T

TO THE NORTH OF QUITO in Ecuador, a winding road cuts through the inter-Andean valleys. Like a dusty, cactus-lined scar on the giant face of the Andean range, it passes through the desolate desert regions of Oton, and the high, cold, and fertile cattle valley spreading at the foot of the massive snow peak of Cayambe, then wanders on towards the Indian lake region, in the province of Imbabura.

According to the Spanish chroniclers of Conquest times, these inter-Andean valleys were invaded in the tenth century of our era by an Indian army that came from the tropical coast, climbed the Andean range, and finally reached the ancient city of the Quitues. They besieged this city, were victorious, and established there the so-called Kingdom of the Shyris.

These primitive invaders were undisputed masters of what are now the Ecuadorian provinces of Manabí, Esmeraldas, Pinchincha, and Imbabura; they were people who, according to legend, had reached the Ecuadorian coast by sea, sailing on the Pacific Ocean in fragile rafts. They founded colonies in the Ecuadorian coast and had settled there for several hundreds of years before they finally overcame the blue Andean barrier, reached the inter-Andean region, and dominated the scattered primitive tribes living in the highlands.

The newly won Kingdom of the Shyris and their prosperity in their majestic Andean surroundings did not suffer any drawbacks until the hordes of the Incas from Peru overcame them and included these territories in the great Quechua empire.

The beleaguered Shyris withdrew to the northern lake region, and the last murderous battle took place on the shores of "Yaguarcocha" lake where thousands of Shyri and Quechua Indians died. It is said that the carnage was so great the waters of

Ecuador's Lake Region Indians still ply their *totora* reed rafts across Lake San P to the foot of Imbabura Mountain, still plow their valleys with yoked o

the lake were tinged with blood and this was the origin of its Quechua name meaning "Lake of Blood."

Many of the Shyris fled to the tropical regions, returning to their first colonies of the coast; others accepted the new yoke and according to Inca law abandoned their language and learnt Quechua which is the language the native inhabitants still speak.

Nowadays, in this Andean lake region live a peaceful, simple, peasant Indian group who are very loyal to their traditions and live a patriarchal type of life, which elsewhere in our days has already disappeared. These people till the soil and are past masters at weaving and making baskets and straw mats.

The Otavalo Indians live on the shores of Lake San Pablo, a sunny, blue, rippling expanse of water at the foot of the enormous Imbabura mountain, whose steep slopes shoot almost perpendicularly to the skies and which in ancient times was one of the tribal gods. This vividly colorful land spreads like a giant patchwork rug of yellows and dark greens, which climbs up to the most inaccessible heights, thanks to the ceaseless effort of the Indian tillers. Their primary passion is the land; they work and slave for it, using all the product of their labors to invest in land and accumulate it bit by bit.

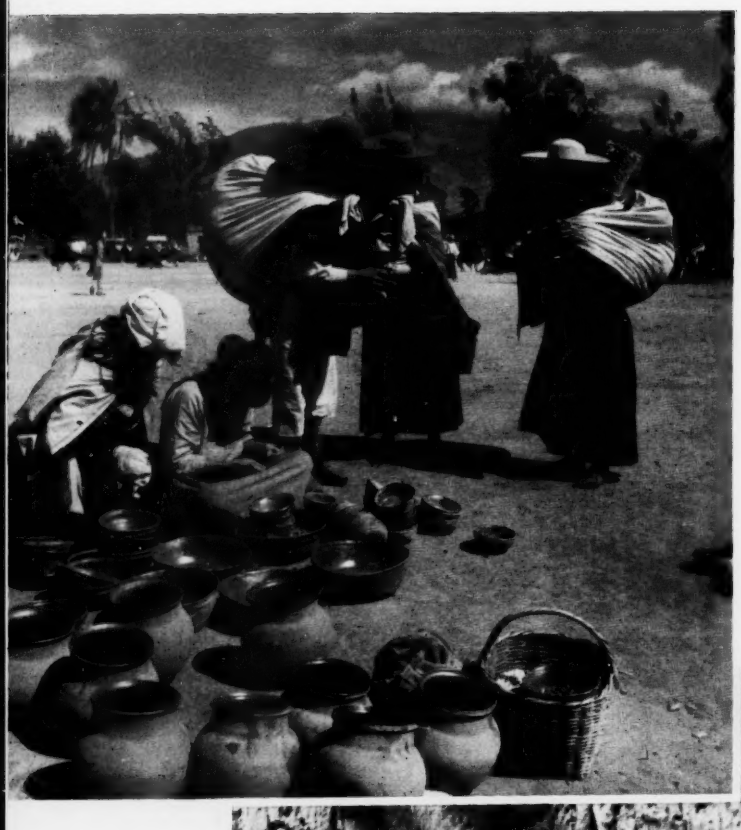
These people have withstood the Inca domination, the Spanish Conquest, and the extortion of the rich landowners of Colonial and Republican times; they have suffered the ignorant contempt of the half-white mestizos. Nothing has seemed to make a dent on them; their roots are deeply planted in the land and they have an intuitive philos-

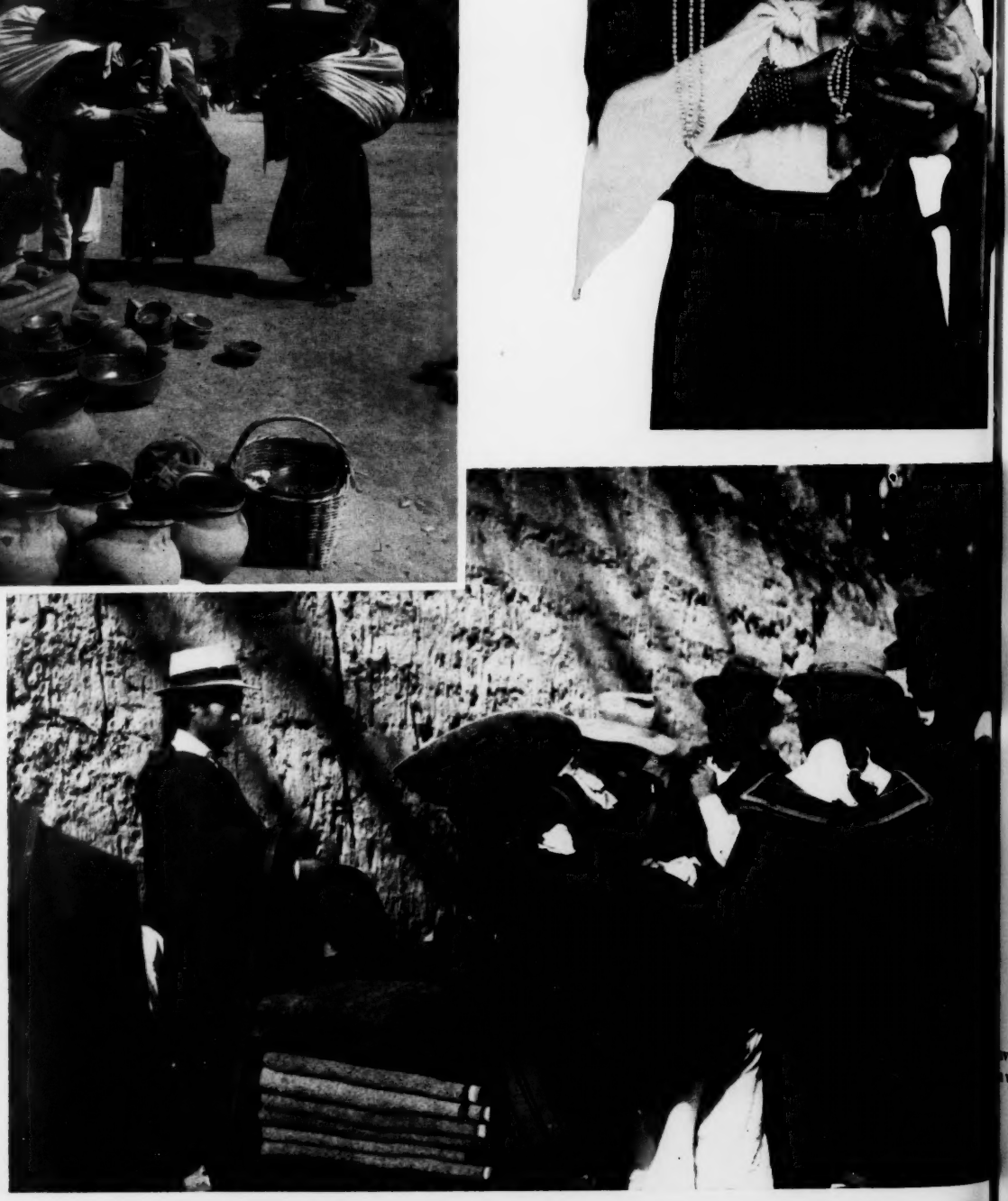
IMBABURA

PHOTOGRAPHS BY BODO WUTH

➔ The love of beads is a weakness of Imbabura women, like this Otavalo girl standing by her spinning wheel.

➔ The pottery market supplies cooking pots and jars to hold the fermented corn liquor, *chicha*. (Rolf Blomberg photo, copyright)





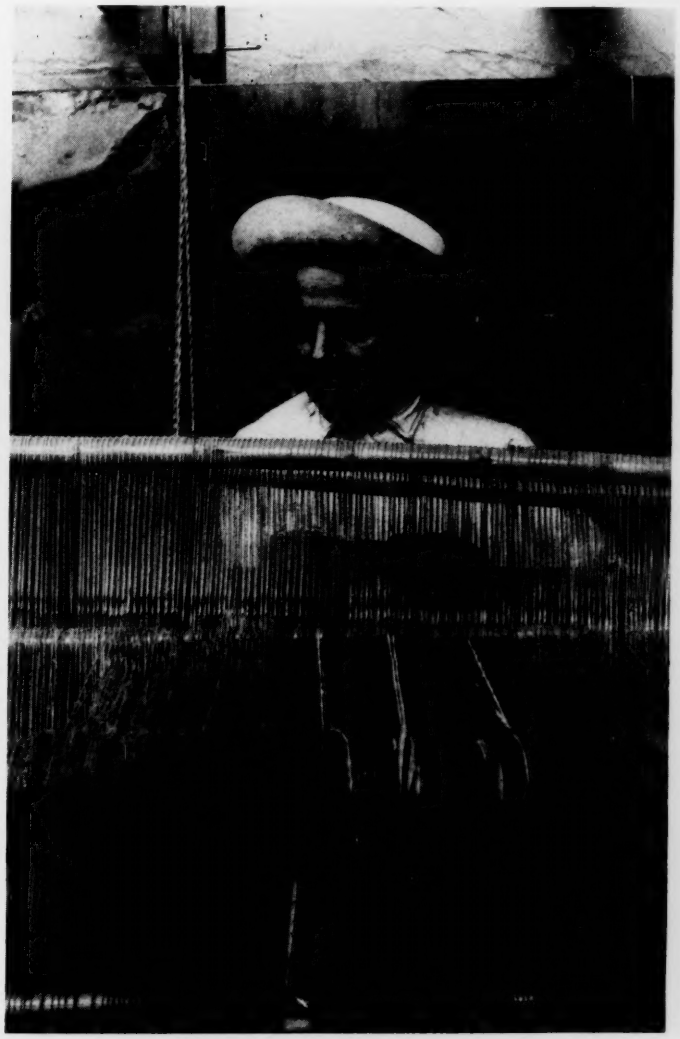
ophy of life. As a people they are in complete harmony with their environment. Through patience and hard work they have been able to keep themselves independent and self-respecting in spite of being members of the "conquered" race. Each of them owns his own cottage and a piece of Imbabura land.

The Imbabura women spin the wool, and on their primitive hand looms the men weave fine wool textiles of all colors, with their own original designs, for their own use, or expertly imitate the designs of the best English and Scotch tweed for outside trading. They peddle their bolts of cloth in all the Ecuadorian and some of the Colombian markets, setting forth from their native villages in groups to visit markets far south and offer their goods from house to house in the cities. Once they have done their trading they return home with their small earnings to buy another foot of ground.

In spite of their continuous contact with the outside world they do not swerve from their ancient patriarchal traditions. They still use their picturesque clothes transplanted from a remote past. In the varicolored market of Otavalo one can see the women dressed in their white cotton blouse and underskirt combined, which is brightly embroidered with floral patterns at the neck, the hem of the skirt, and the sleeves. Over this underskirt they wear the *anaco* or woollen skirt slit on the side, which is either red, blue, black, or orange, held at the waist by a girdle embroidered with stylized animal figures and encircling the wearer several times. They also use very attractive coral necklaces interspersed with old Spanish silver coins, colored glass beads, or roughly beaten copper beads. The head is covered by a striped cotton cloth tied in back and surmounted by the typical huge white or brown felt hat.

In the market too, one can see the many shades of the men's *ponchos* and the clean whiteness of their shirts and short cotton trousers. Once in a while, on the lake, men astride a long log of woven *totora* reeds drift, paddling slowly, to the other side of the lake, to the very foot of Imbabura mountain. With their copper colored faces of Mongol cast, their long plaited coarse black hair, their mujik-style cotton blouse and short trousers, their naked legs and rope and canvas sandals, they would be a most inspiring theme for a ballet costume designer.

In the nostalgic mountain twilights when the paling sky and dark mountain horizon are reflected on the quiet surface of Lake San Pablo, the night wind suddenly rises, whistling mournfully through the cold marshes. It is mostly at this sunset hour that one can hear some Indian shepherd boy playing the *rondador* or pipes of Pan. The melodies played on this ancient instrument are



limited but pure, resembling the Andean wind rustling through the bamboo stalks.

At some distance from Otavalo on the ancient crater of Cotacachi Mountain, like a cyclopean drop of heavy quicksilver set in a black basalt cup, is Lake Cuicocha. In contrast to San Pablo, this

vers are men (ABOVE) — their hand looms turn out everyday ponchos or the finest tweeds
woolen yarns the women spin. Everyone (LEFT) goes to market to buy the goods.

The *rondador* — Pan-pipes — of bamboo stalks gives out melodies which have haunted these hills for ages of Indian time.

lake gives the traveler an eerie and icy impression. The waters are deadly quiet, dark and glacial. Overhead the vultures circle silently, descending and ascending tirelessly. In the center of the lake two basaltic islets rise, bleak, but covered with a dense, arborescent vegetation; their shadows deepen the darkness of the narrow solitary channels. An old legend has it that this like is a place of ill omen, haunted by the souls of men who in ancient times were condemned as prisoners of war, to be left on the islet and die there of hunger and cold.

Leaving the village-to-village marathon to the men, the girls have their own less strenuous dances.

Devout Otavaleños visit the Catholic cemetery on All Souls Day.

Wives drink too, but husbands need the homeward helping hand.

Like all simple peasant folk the Otavaleños are profoundly religious and they piously attend the church services. They have been Christianized by the Catholic Church but, as in other Indian regions, the Church allows them to understand Christianity in their own way and to mix it with their own old rites and superstitions. They comply with Catholic ritual and keep up their ancient customs – for instance, on All Souls Day they take food and drink to the Catholic cemetery, to nourish the dead on their very long journey to the abode of the gods. And they bury in their fields a stone ear of corn or a phallic object as a symbol of fertility to attract the rain and bring a good harvest.

As in most Andean villages there are in Otavalo and Cotacachi one or two prominent members of the community who still ply the time-honored trade of renting dancing costumes for the semi-pagan Indian festivals held. usually, on a Catholic holiday. On such days groups of dancing Indians may be seen who drink, chant, mimic, and do a thousand pirouettes for the pleasure of the spectators.

On the day of St. John a dance takes place, which may be termed a marathon competition, doubtless originating in some ancient tribal ritual of graduation into manhood. Groups of poncho-clad and bell-bedecked men set forth, dancing down the dusty roads with skipping steps and swaying, jingling bells – their aim, to dance some good 50 to 60 kilometers as a feat of strength and proof of manhood. Naturally they stop at some village en route, fortify themselves with some *chicha* (corn beer) or potent sugar-cane brandy, do a special number to the accompaniment of an old, perhaps blind harp player sitting by the wayside, and then jingle on to the next stop.

On the days of Saints Peter and Paul, the cactus-lined roads, the yellow witch broom, and the eucalyptus woods are lit up in the night by the fragrant eucalyptus bonfires. Around the fire the old people sit and talk, or tell stories of days gone by, and the children jump through the flames like little red goblins.

The land of Imbabura is one of the most picturesque in this part of the world, with a flavor of the simple, healthy peasant life of centuries ago, with the barbaric imprint of the Indian races who, not yet changed by our hurried and worried modern age, are deeply rooted in the majestic Andean land.

Cuicocha Lake on the crater of Cotacachi Mountain where before the Conquest doomed men were sent to die of hunger and cold.

LAST YEAR, *after a little detective work, Albert Marshall and I discovered a glacier in Nevada's Snake Range. While stalking the ice, which lies hidden deep in Wheeler Peak's great north cirque, we spent five days knapsacking in as delightful an alpine sky country as we had even seen. In fact, we were so impressed that in my report on the glacier* I suggested that the finest part of the Snake Range be included in a national park or monument.*

The idea caught on immediately in Nevada and has been favorably received by conservationists. As a result, an active campaign was launched, spearheaded by the White Pine Chamber of Commerce and Mines at Ely, the only local group capable of undertaking such an ambitious project. A special committee was formed, which has been working enthusiastically to bring about the creation of "The Great Basin Range National Park," as it is tentatively called. Nevada's congressmen and senators are interested and statewide publicity has created a general receptiveness with, as yet, little opposition.

Fence-sitters, doubters, and downright skeptics exist aplenty, however. But most of these people have never inspected the area personally and base their luke-warmness on the general theory that there is nothing in the desert country of eastern Nevada worthy of park status. Unfortunately, too, Lehman Caves National Monument, at the east base of the Snake Range, is mistakenly assumed by some to be the principal basis for the proposed extended area. They argue that gigantic Carlsbad and Mammoth Caves are already two national parks featuring limestone caverns and that a third lesser one is not desirable. But such arguments are wide of the mark. No duplication is intended. If the proposed park were established, Lehman Caves would be an interesting feature, but by no means the most outstanding. The important thing to us who advocate the new area is that it would preserve for all time in its natural state a magnificent and varied mountain country, which is unsurpassed in the entire Great Basin region.

'THE GREAT BASIN RANGE

ONE OF THE FUNDAMENTAL policies of the Park Service is that each unit within the system should exemplify a definite type of scenery and, where possible, every park should be the finest of its kind. So theoretically each of our national parks is different from the others and all are supreme examples of America's originally rich and diversified wilderness. There remain, however, a number of highly individual and significant types not now adequately represented. One of them is the Basin-and-Range topography typical of the vast desert region between the Rockies and California's Sierra Nevada. Here are some two hundred separate ranges alternating with wide, arid, treeless valleys. These mountains are so distinctive and important geographically, geologically, botanically, zoologically and climatically that they have become widely known as "Basin Ranges" or "Great Basin Ranges." Yet in spite of their superior scenic, recreational and scientific attractions, no national park or monument has been specifically set aside to preserve the type. Thus, there exists a characteristic kind of Western scenery, now lacking in the park system, that should be added while there is still time.

The number-one candidate to fill the gap is the Snake Range. Situated in east-central Nevada, just west of the Utah line, it is unquestionably the finest of all the Great Basin ranges. Stretching north and south for 80 miles, and 10 to 15 miles wide, the Snake Range towers abruptly 6,000 to 8,000 feet above desert valleys to the east and west, and culminates in Wheeler Peak, Nevada's second highest point, 13,063 feet above sea level. Geologists say that this huge mountain mass is a typical fault block range, consisting of a vast arch of ancient quartzite thousands of feet thick. Here and there are granite intrusions, and limestone flanks the lower slopes on both sides. Like many fault blocks, the Snake Range is tilted so that the crest rises in a steep escarpment on the west, while the more gradual eastern side has been eroded into a series of transverse ridges separated by deep canyons.

From base to summit are five of North America's seven Life Zones. These range from Upper Sonoran to Arctic-Alpine, and in an air-line distance of five miles on the precipitous west slope are all the climatic and vegetational changes one would encounter on a 2,600-mile journey to northern Alaska. This telescoping of desert, forest, and mountain climates within the space of a few miles is a characteristic of the Great Basin ranges, but nowhere is it more dramatically displayed than here. As yet, little disturbed by man, the area is a natural zoo, aviary, and botanical garden where animals, birds, plants, and flowers of the Southwestern deserts, Pacific Coast, and Rocky Mountains meet and mingle with rare varieties found only locally. Little study has been given to the scrambled ecologies of the Snake Range, but it would make a fascinating field for those interested in wildlife, birds, plants, or flowers.

But most remarkable is the surprising oasis of superlative alpine scenery perched high above the desert.

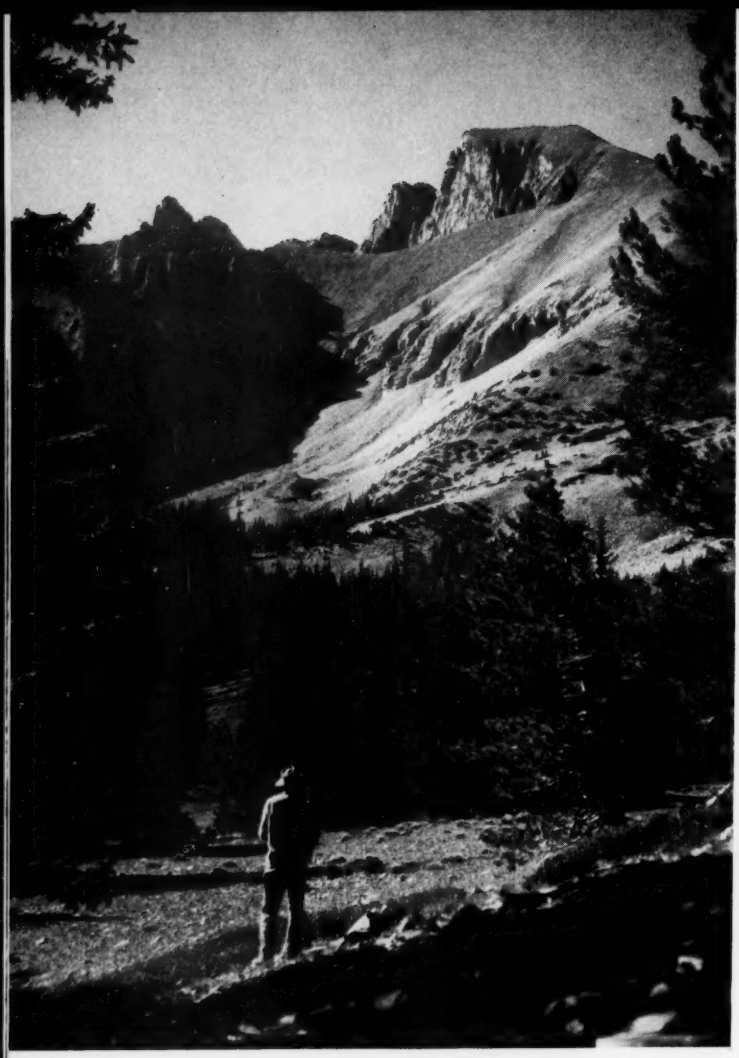
*Publication pending. The author's more detailed article on "The Proposed Great Basin Range National Park" will appear in the *Sierra Club Bulletin* annual for 1956.—ED.

NATIONAL PARK FOR NEVADA?

At the heads of east-side canyons is a series of glacial basins cradled among rugged, snow-striped peaks, the whole resembling a piece of the Colorado Rockies dropped in arid Nevada by mistake. It is an exhilarating sky island of spruce forests and aspen groves, green, flower-spread meadows, jewel-like lakes, and cascading streams. The area, too, shows outstanding examples of glacial topography. Ancient glaciers have gnawed out huge rock-walled cirques in the north and east faces of the summit ridges and sculptured the canyons almost to their lower ends. They also left relatively fresh moraines on the floors of the basins. A few permanent ice-fields still persist and on Wheeler Peak lies the only living glacier in the entire Great Basin region, east of the High Sierra rim.

This alpine country, covering an area of approximately 30 square miles, is too rough and restricted for extensive road and resort development, and it makes an ideal wilderness playground for camping, hiking, climbing, fishing, and exploring. Although little known and seldom visited, it impresses everyone who goes there as profoundly as it did Albert Marshall and me.

The view south over the jumbled peaks and ridges of eastern Nevada's Snake Range sweeps thousands of square miles of Great Basin valleys, hills, and mountains.



The north face of Wheeler Peak, summit of the Snake Range, rises 3,000 feet above the head of Lehman Creek basin.

So there is a small but growing group of Wheeler Peak enthusiasts that sincerely believes some hundred square miles, containing Lehman Caves, the finest east-side canyons, the superb alpine section, and the spectacular western escarpment, would make a unique and significant addition to the national park system.

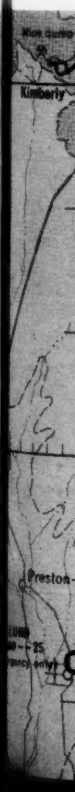
Lehman Caves is 62 miles east of the copper-mining town of Ely, and is reached by paved U. S. Highway 6, which crosses the Snake Range through the broad gap of Sacramento Pass, 7,159 feet altitude. East of the mountains hard-surfaced State 73 branches south to Baker, five miles. This little ranching center is situated at 5,650 feet elevation on the edge of broad Snake Valley, with the snow-flecked summits of Wheeler Peak and its satellites soaring grandly to the west. Here are cabins, general store, restaurant, and gas station. The Snake Range is included in a detached section of Nevada National Forest, and at the Baker Ranger Station maps and information may be obtained. From the town a paved spur road heads directly for the mountains, gradually ascending Lehman Creek, six miles, to Lehman Caves National Monument. The road ends at headquarters, pleasantly located at an elevation of 7,000 feet among piñons and junipers on the lower slopes of the range. Nearby is picnic ground, and cabin accommodations are available.

The monument, covering one square mile, was created in 1922 to preserve a singularly beautiful series of underground limestone chambers and corridors, discovered by pioneer Absolom Lehman in the 1870's. Some speleologists even consider them the finest to be found in the West, and many people believe they are the most beautiful in the country.

The monument lies between two east-side canyons, which lead up to the high country around Wheeler Peak. In both are Forest Service campgrounds reached by fair dirt roads. Lehman Creek canyon, to the north, is the most popular approach and the campground, three miles from the monument, at an elevation of 8,000 feet, is the starting point of the eight-mile Wheeler Peak trail.

A more delightful and varied hike it would be hard to find. The route ascends beside foaming Lehman Creek, passing through aspen groves alternating with shady woods of white and Douglas firs, and grassy openings bright with wildflowers. Now and then the trail loops up sunny slopes of piñon, manzanita and mountain mahogany. Some of the last are giants of their race, forty feet high, with trunks more than a foot in diameter. At four miles the high glacial basin is reached and the scenery becomes alpine. Here, the precipitous north face of Wheeler Peak rises impressively 4,000 feet above green meadows, bordered by tall pointed Engelmann spruce. On the rocky rims above are fine stands of bristlecone pines, and the aspens go to timberline, where they form extensive mat-like thickets not more than a foot high.

At Stella Lake, largest of the three moraine lakes at the head of Lehman Creek, the trail tackles the headwall and surmounts the divide. Beyond the last wind-whipped spruces and limber pines, it follows the bleak arctic ridge upward to the steep summit cone. On both sides the slopes plunge down to the desert, thousands of feet below, and range after range of mountains recede to the distant horizon. But even here miniature alpine gardens bloom amidst the waste of rocks and brighten the way almost to the top. From the wedge-shaped summit of Wheeler Peak is a 360-degree panorama embracing thousands of square miles of deserts, hills, valleys, and mountains in eastern Nevada and western Utah. But perhaps most impressive is the closeup of peaks, ridges, basins and canyons of the



Part of USCGS Sectional Aeronautical Chart of the U.S., Reno sheet (T
August 1955 base. Scale, 1:500,000 (1 inch = approximately 8 statute mil
The highway between Ely and Garrison is U.S

Snake Range itself, stretching southward in jumbled confusion.

Strangely enough, the glacier cannot be seen from the Lehman Creek basin nor even from the summit. Although the jagged rim and sheer rock walls of the great north cirque are the most prominent features of the landscape, the floor remains persistently hidden from all points outside. That is undoubtedly why the glacier wasn't discovered until 1955. The cirque must actually be entered to see it, and there is no reason to suppose that anyone had done so before then.

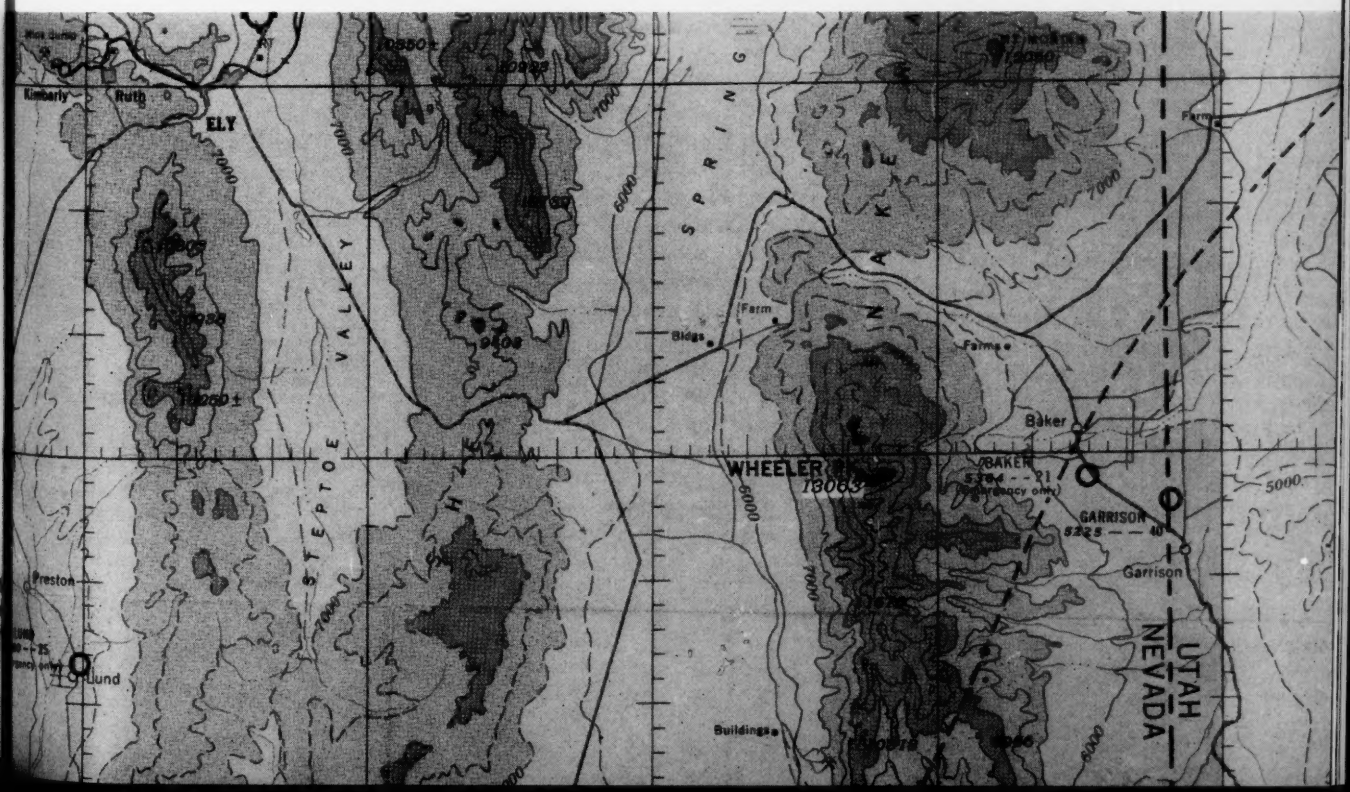
My curiosity was first aroused some years ago by an article in an old United States Geological Survey annual report, which described a body of ice seen on Wheeler Peak in 1883. But it gave few details, and no intimation that it might be an active glacier. My interest was further stimulated by an examination of air photographs, and a distant view of Wheeler Peak's north face while crossing Sacramento Pass in 1947. Time didn't permit investigation then, but I felt certain that some of the ice remained and resolved to have a closer look at the earliest opportunity.

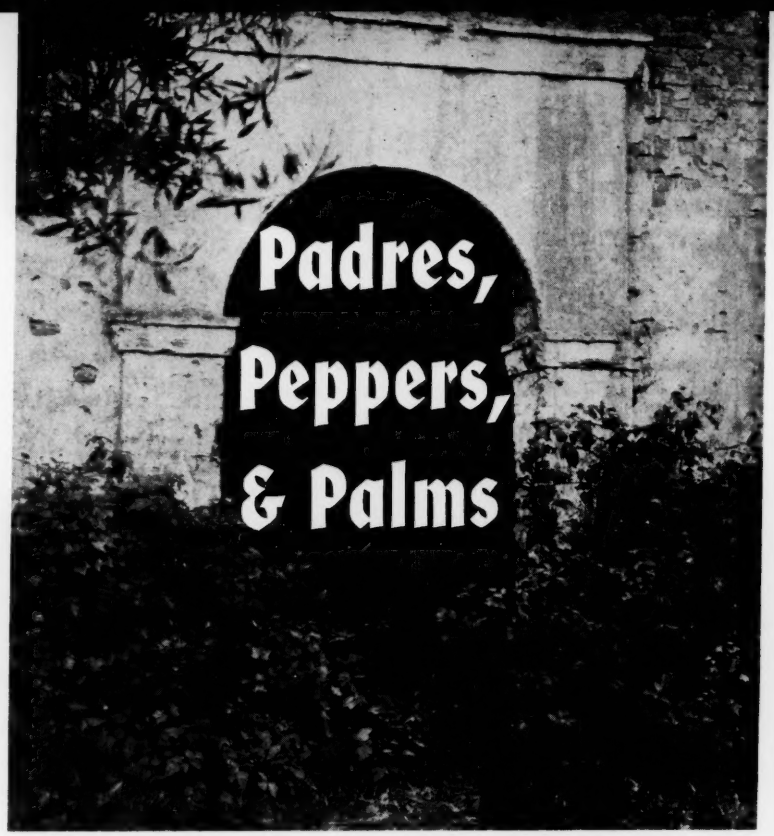
Eight years passed before I was able to satisfy my curiosity. But finally last September, Albert Marshall, companion on many previous mountain jaunts, joined me and we spent several days exploring the high country, climbed Wheeler Peak and descended the north face far enough to see ice, and eventually made our way into the great north cirque. When we laboriously passed the portal-like cliffs and looked into the depths beyond, we both shouted at once. For there, cradled in the gigantic rock basin, was not just merely ice, but an active glacier. All the signs of moving ice were readily apparent — névé, bergschrunds, crevasses, and fresh moraines. True, this was no giant river of ice we had found — triangular in shape, its greatest dimension probably does not exceed 2,000 feet — but the wonder is that it is still there at all in the midst of the Nevada desert.

The place is awesome and spectacular. It bears a remarkable resemblance to the east face of Longs Peak and rivals that famed Colorado cirque in size and grandeur. The enclosing walls rise in great cliffs, 1,500 to 2,000 feet high, with Wheeler Peak soaring in an unbroken, almost perpendicular precipice.

Although the crest declines in altitude south of Snake Creek, those who know the country say that some of the most spectacular canyons and rock formations are in the southern part of the range. So a careful inspection of the whole area should be made before an arbitrary boundary is drawn for any proposed national park or monument. Too small an area would defeat the purpose of preserving the finest example of a Great Basin Range in its natural state as a representative type of original American wilderness.

In 1955 our national parks, monuments, and recreation areas had 46,000,000 visitors. By 1970 that number will be doubled. Under the provisions of the Park Service's Mission 66, more adequate and modern facilities will be provided in the present national park areas. But that is not enough. We must also keep pace with the country's growth by adding new parks for the enjoyment, education, and inspiration of future Americans who will live in an age of even greater congestion, speed, and tension than ours. As population expands and fast-paced modern civilization encroaches upon our last remnants of wilderness, we will increasingly need such unspoiled outdoor recreation areas as this high, exhilarating country round about Wheeler Peak — and its glacier.





Arched doorway at Mission San Juan Bautista. (Katharine Hooker)

Padres, Peppers, & Palms

DOROTHY REYNOLDS

The Story of Alta California's Bountiful Mission Gardens

MISSION GARDENS were a deep source of comfort to the Franciscans who brought civilization to the strange, heathen land of California. In them, the padres paced softly back and forth, telling their beads in the light shade of rustling palms or gray-green olive trees, reading the office beneath fruit trees which showered them with fragrant petals or temptingly offered delicious peaches, pears, and apples as symbols of the goodness of God.

During the first year or two, however, a mission settlement necessarily concentrated upon the production of beans, corn, and wheat. These were supplemented by dried figs, dates, and raisins shipped up from Baja California, and by the harvest of that vast natural garden from which the Indians – to whom the sowing of crops was unknown – gathered fruits, berries, wild vegetables, roots, acorns, piñon nuts, and edible seeds of many kinds.

"All the plain is dotted over with wild grape vines, which look as if they had been planted, and at present their many branches are in bloom," Father Crespi wrote to Father Palóu on June 9, 1769, shortly after reaching San Diego, the site chosen for the first settlement.

Portolá discovered so many grapevines in the valley where San Juan Capistrano was later erected that he compared the region to a great vineyard, while the river banks at San Gabriel were lined with blackberries, grapes, and roses, as well as with wild celery and onions.

Such natural fecundity set the homesick friars to dreaming of the gardens of Spain and Old Mexico and planning orchards and vineyards of their own. Soon slips and saplings were taking root in the fertile soil; and vegetables, kitchen and medicinal herbs, and flowers to beautify the altars were flourishing in the propitious climate of Alta California.

Obtaining a dependable supply of moisture was the most difficult problem. Floods destroyed sowings along the river banks, while plants a little farther away from the streams died during the long, rainless summer. But gradually water was distributed to fields and gardens and piped to patio fountains by irrigation systems, some of which included many miles of ditches, flumes, and aqueducts across deep ravines.

After Father Font's scurvy had been cured by the vegetables at Mission San Carlos, he declared it was "a delight to see the garden so beautiful

and full of vegetables — all around it was a border of azaleas — the beds full of cauliflowers, lettuce and other vegetables and herbs."

At first, the disease from which he had suffered afflicted so many newcomers to California that Indians refused to eat Spanish food, believing this to be the cause. But with the establishment of mission gardens and orchards, it was quickly brought under control, and even whaling vessels and Manila galleons were able to rehabilitate their stricken crews with vegetables and fruits taken on at various ports.

"The gardens of the Governor and the missions were filled with an infinity of culinary plants, which were gathered for our use," the French explorer Comte de la Pérouse wrote in 1786, "and our seamen never had greater abundance of vegetables in any part of the world."

Langsdorff, who accompanied the Russian expedition of 1806, praised the kitchen gardens at San José, which he characterized as "exceptionally well laid out" and in good order. The fruit trees were still small but the vineyards were already yielding bountifully.

As mission and *rancho* cattle roamed in ever-increasing numbers about the countryside, growing things had to be protected by high walls of adobe with tiles laid along the top, or else by impenetrable hedges of tuna cactus, introduced from Mexico, which produced edible fruit with an appetizing, tartly refreshing flavor.

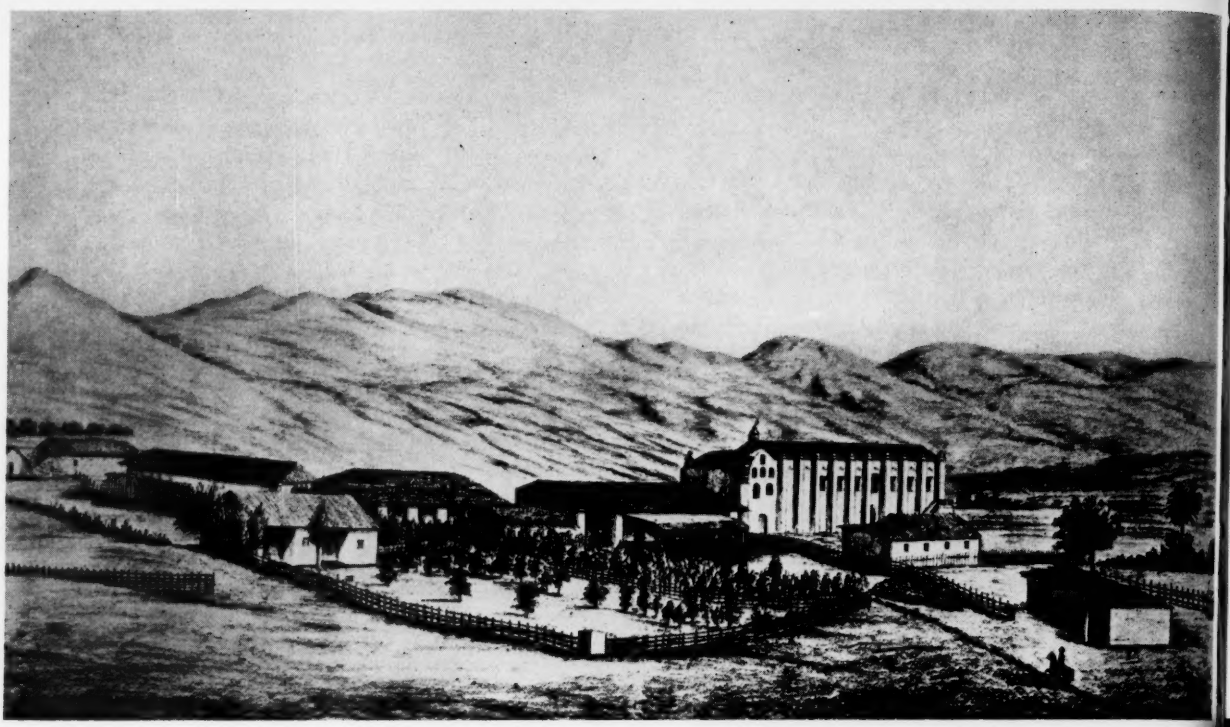
Many of the padres were Spartan men, inured to danger, hardship, and affliction. But they were sensitive, cultured persons, too, keenly appreciative of nature, both for its intrinsic loveliness and as a token of God's bounty.

The abundant wild roses gave them infinite delight. Father Serra cooled his face with their petals and murmured gratefully, "Blessed be He who created them." He loved them all his life, and great sheaves of them were laid upon his bier by the sorrowing Indians.

Crespi loved them, too. He wrote, "There are many Castilian rose bushes with very fragrant roses, which I have held in my hand and smelled — in short, it is a beautiful land, quite distinct from that of Antigua California."

The padres transplanted so many of these wild-

Tuna or prickly pear cactus in the ruins of Mission San Juan Capistrano. (Author)



Mission San Gabriel, with fenced orchard and other planted trees. (Drawing, ascribed to William Rich Hutton in caption in *The Last of the Conquistadors: Junípero Serra*, by Omer Englebert [Harcourt, Brace and Company, New York, 1956], courtesy Huntington Library)

rose bushes – called *teczuma* by the Indians, who made flour from the very oily seeds – that almost every mission still proudly displays its "roses of Castile."

Plants from many corners of the world reached the mission gardens. Treasured seeds and slips were carefully guarded during the long, exhausting trip from Old Mexico or Baja California, so that they might help turn the new, strange country into a bit of the homeland. And as additional missions were founded, horticultural contributions were sent, along with vestments and vessels, as precious gifts from older establishments.

Date seeds presented to Mission San Diego by Visitador Gálvez in 1769 eventually developed into stately trees, two of which remain near the ruins of the first settlement. The English walnut was probably propagated from nuts brought from Spain. Seeds of the pepper tree, the *Schinus molle*, from Peru were planted at San Luis Rey in 1830 by Father Peyri. Descendants of these trees, with their drooping, lacy foliage and graceful sprays of coral berries have spread throughout the state.

"We enriched the gardens of the governor and missions with various seeds we brought from Paris," la Pérouse wrote in his journal. "Our gardener gave the missionaries some potatoes of Chili, perfectly well preserved, which I by no means consider one of our meanest presents, as I am of opinion this root will succeed perfectly in the light and highly vegetative soil of the environs of Monterey."

Many plants were common to the various Spanish settlements. Grape cuttings brought from Mexico were grafted onto the stock of wild vines and spread throughout the province, thriving so well that years later Alfred Robinson, one of the first *yanqui* immigrants, was told that in California there were two things supremely good, the Señora Noriega and grapes."

By 1797 the wine made at San Diego had gained such a fine reputation that the Viceroy of Mexico ordered some for "our august monarch, Don Fernando VII." He also requested a barrel for his own use. "Mission" grapes are still used as wine and table grapes. Very sweet and juicy, with a delicious flavor, they grow in loose bunches, characterized by medium-sized berries, round and purple-black, with a heavy bloom, large seeds, and thin skin.

De Mofras, a French scientist who visited California in 1841, declared that San Luis Obispo's

olive grove rivaled the finest in Andalusia. One can still see gnarled specimens of the original trees in many of the old gardens, and the mission olive is sometimes used for pickling, today.

San Gabriel had a large orange orchard, which furnished plantings for the first commercial grove, set out by William Wolfskill in 1841. Mission pear trees, some of them still bearing, are the oldest deciduous fruit trees in California. The mission fig was a prolific variety, still very popular, with a sweet, long-necked, mahogany-purple fruit.

The simple loveliness of stone and adobe churches was a result of careful planning. Palóu referred primarily to the edifices when he said a mission should be as beautiful as a cathedral, so as to impress the Indians with the glory of God; nevertheless the enhancing effect of surrounding plantings was by no means neglected.

Father Zalvidea of San Gabriel put in rose and cactus hedges and laid out a flower garden with a sundial in the center. He also planted olives, citrus, and other fruits, as well as two thousand grape vines interspersed with flowering shrubs.

San Luis Obispo had the first cruciform grape arbor in California, and many pepper, olive, and pomegranate trees, a few of which still survive. An acanthus plant from its garden was used by the Indians as a leaf pattern for church decoration.

Father Majín de Catalá, the "Holy Man of Santa Clara," had the Indians gather black willow slips from nearby creek banks and plant them in rows along the Alameda between San Jose and Santa Clara to provide shade for the inhabitants of the former when they made their weekly journey to the mission to hear Mass. On feast days, as the procession came down this road, doves with trailing ribbons fastened to their feet were released to fly in front of small girls strewing wild flowers. Bayard Taylor and other visitors of the

↑ An intimate corner of the building and gardens of Mission San Juan Bautista, with rose trellis and climbing vines. Note potted plants under the portico.

← The stairway at the right end of Mission San Gabriel as shown in the drawing on opposite page, with Indian children and pepper tree. (Both, Katharine Hooker, taken on a tour of the California missions in 1893)

The old garden of Mission San Juan Capistrano, partly restored, with modern statue of Fr. Junipero Serra. (James D. McClure, from his *California Landmarks*, copyright 1948 by the Board of Trustees of the Leland Stanford Junior University, published by Stanford University Press)

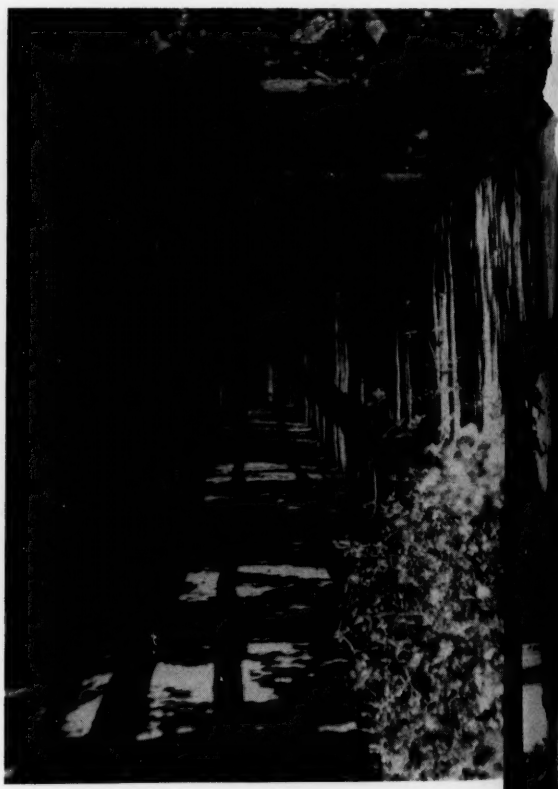
mid-1830's were much impressed by the size and beauty of these trees, which today have practically all disappeared.

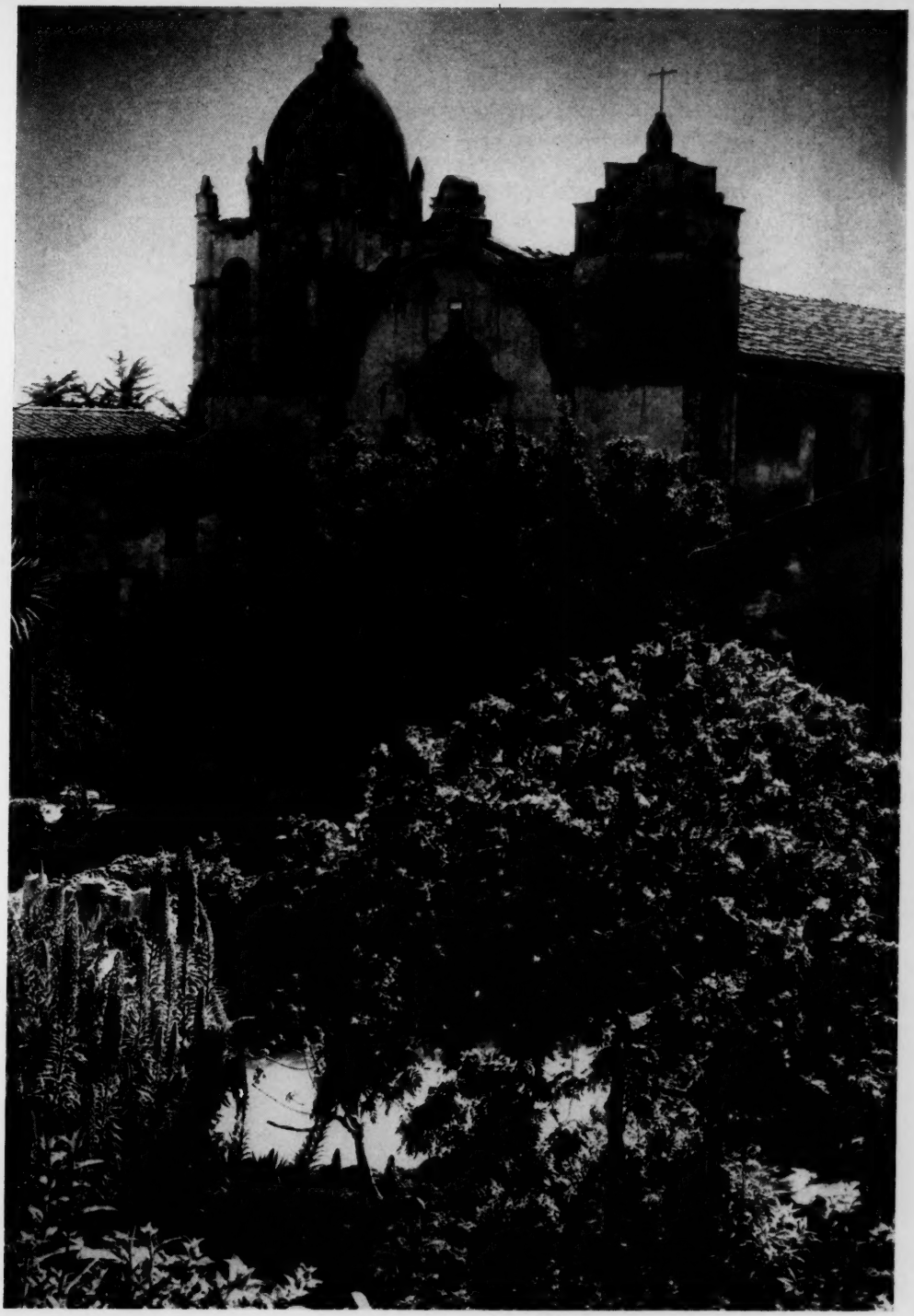
In 1851, Father John Nobili established a college at Mission Santa Clara, at first holding classes on rustic benches under the grape arbors and olive trees. The present garden contains original fig and olive trees, a "Castilian" rose bush, the oldest grape vine in northern California, and some very large Washington palms, the only native variety.

San Luis Rey must have been a most impressive establishment, for the French traveler Auguste Duhaut-Cilly described it in 1827 as a glittering white palace surrounded by gardens and orchards. A wide stairway reminded him of Versailles and he was also delighted by two beautiful fountains with quaint gargoyle heads that gushed water into pools in which the Indian women washed their clothes.

Father Altamira, who, in 1823, founded Mission San Francisco Solano (Sonoma), the last bead of "Padre Serra's Rosary," used willow slips to enclose the garden and the extensive orchard and vineyard. He named this region the Valley of the Moon – a title later used by Jack London – because at the winter solstice the moon appeared and disappeared seven times before finally floating clear in the sky.

Like most gardens of the period, the one at Santa Cruz had "Castilian" roses and variegated thistles, but its specialties were chili peppers, melons, pumpkins, gourds for drinking-cups, and herbs essential to the Spanish-California cuisine.





Mission San Carlos Borroméo de Carmelo was Junípero Serra's headquarters as prefect of the Alta California missions, and his burial place. (James D. McClure, source as given on page 16)

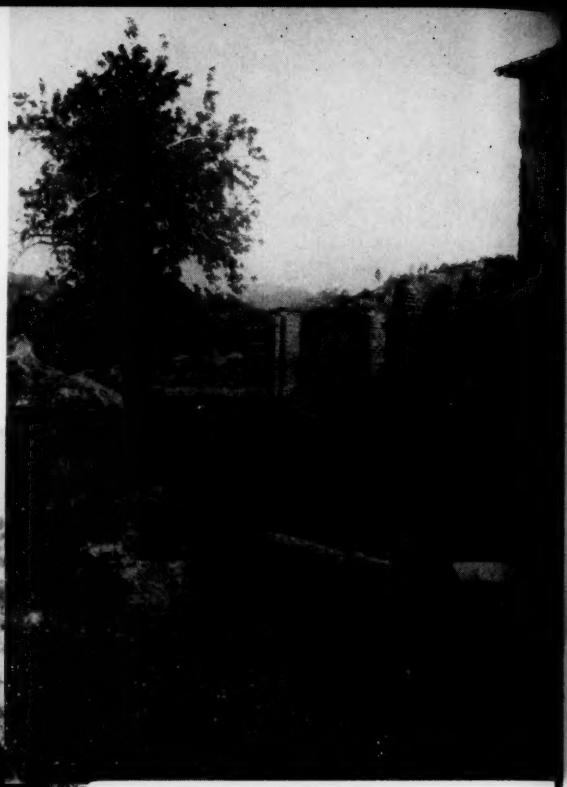
he beautiful old
ape arbor at Mission
n Juan Bautista.
(The author)

Upon their secularization, which began shortly after the Mexican War of Independence, many of the missions were sold to the highest bidder, who thenceforth used the property as he saw fit. San

Cypress bordered walk at Mission Santa Clara. (The author)

Luis Rey became a hog ranch and its one-beautiful gardens a slaughtering-place. Fruit trees were neglected and cattle and horses grazed in the gardens of most establishments.

But eventually the missions were returned to ecclesiastical ownership and the delicate and laborious process of restoration begun. Roofs were repaired, tiles and plaster mended, gardens, courtyards, and even cemeteries made beauty spots.



In semi-arid California, the getting and keeping of water was always an important task at the Missions. San Antonio de Padua (ABOVE) had near its well this huge metal jar or basin. Santa Barbara had stone basins (LEFT) where Indian women did the mission laundry beneath a fig tree's shade. (Katharine Hooker, 1893)

Plumed tamarisks frame the church entrance at San Antonio de Padua. There, too, may be seen a few of the original pomegranate and pear trees, as well as olives transplanted from the old orchard about 1845 by Father Doroteo Ambrís, a Mexican-Indian priest, who also created a delightful old-fashioned garden and a collection of native herbs.

According to his notes, parsley root was at that time considered a specific for bladder trouble, *balsamillo* (California fuchsia) for spleen or syphilis, cascara for rheumatism or poisoning. Rosemary leaves boiled in red wine were supposed to cure consumption, epilepsy, and weak eyes. A felon could be healed by the application of poison-oak leaves, and insanity relieved by a poultice of boiled laurel leaves, olive oil, and spices applied to the head. Sage or salvia was useful to prevent insomnia, squash seed for tapeworm, *yerba de pasmo* for wounds, including tetanus, *yerba de la golondrina* for coughs, dropsy, jaundice, and snake bite.

In 1919, Father Méstres, restoring the garden of San Carlos chapel in Monterey, succeeded in rescuing from the bay the remains of the historic live oak under which Vizcaíno's Carmelites had held services in 1602 and Padre Serra had celebrated Mass in 1770, accompanied by volleys of cannon shots from the deck of the *San Antonio,* anchored in the harbor.

The original gardens at San Francisco de Asís (Mission Dolores) have disappeared. But rhododendrons, azaleas, dahlias, and "Castilian" roses now brighten the old cemetery, restored by the Reverend John W. Sullivan about 1916. In this *campo santo* were buried five thousand Indians, numerous Spanish soldiers and officials, including Governor Argüello, many Irish and Italian

immigrants of Gold Rush days, and even the notorious Casey and Cora hanged by the Vigilantes.

Brown-robed Franciscans still walk and meditate in the secluded Sacred Garden at Santa Barbara, which is for the special use of the friars, although male visitors are allowed to inspect its boxwood-bordered beds, lovely fountain, and fine Italian cypresses, its semi-tropical shrubs and trees, and four hundred varieties of cacti and succulents. After the violent earthquake of 1925 made the mission buildings unsafe, the friars camped out in this garden for several weeks.

The East Garden, the old cemetery, contains tombs of important people of Spanish days, as well as of some four thousand Indian neophytes. Numerous distinguished plants include an olive tree set out in 1919 by King Albert of Belgium and a weeping willow brought as a slip from Lafayette's garden.

Most delightful of all, today, is the "singing garden" of San Juan Capistrano. About 1910, Father St. John O'Sullivan there began clearing away debris and nursing back to health the original old pear trees, olives, pomegranates, and roses. He also planted a wide variety of other shrubs and flowers, and erected in the entrance garden a life-sized statue of Serra and an Indian boy.

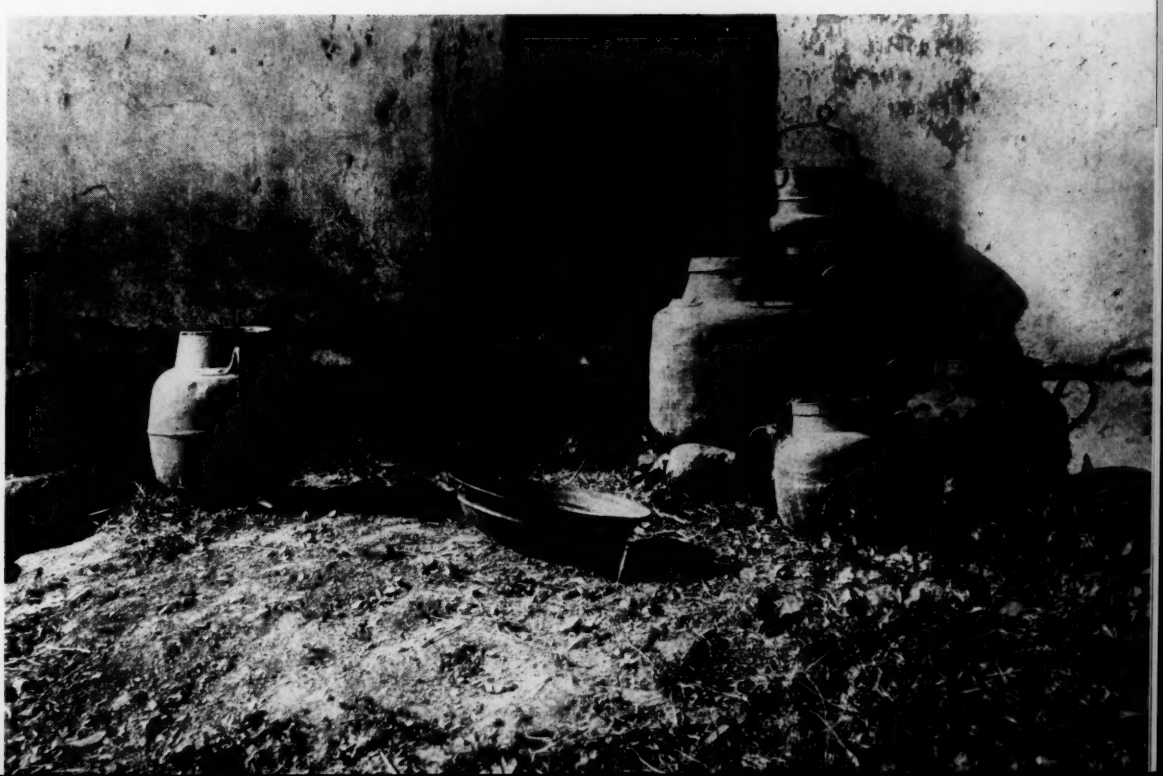
But the real distinction of this garden is its swallows, which for the last century or more, it is said, have been arriving with "miraculous" punctuality every year on March 19, St. Joseph's Day, swooping and wheeling in great clouds of brown and gold. They settle into mud nests along the cornices and arches, driving out the swifts that have held possession during the winter months. Meanwhile linnets and mocking birds sing an excited greeting, a children's choir gives a concert, and the townspeople stage their annual fiesta.

Throughout the summer, the swallows nest and raise their young, then on St. John's Day, October 23, they depart as suddenly as they arrived, whereupon the swifts again take over.

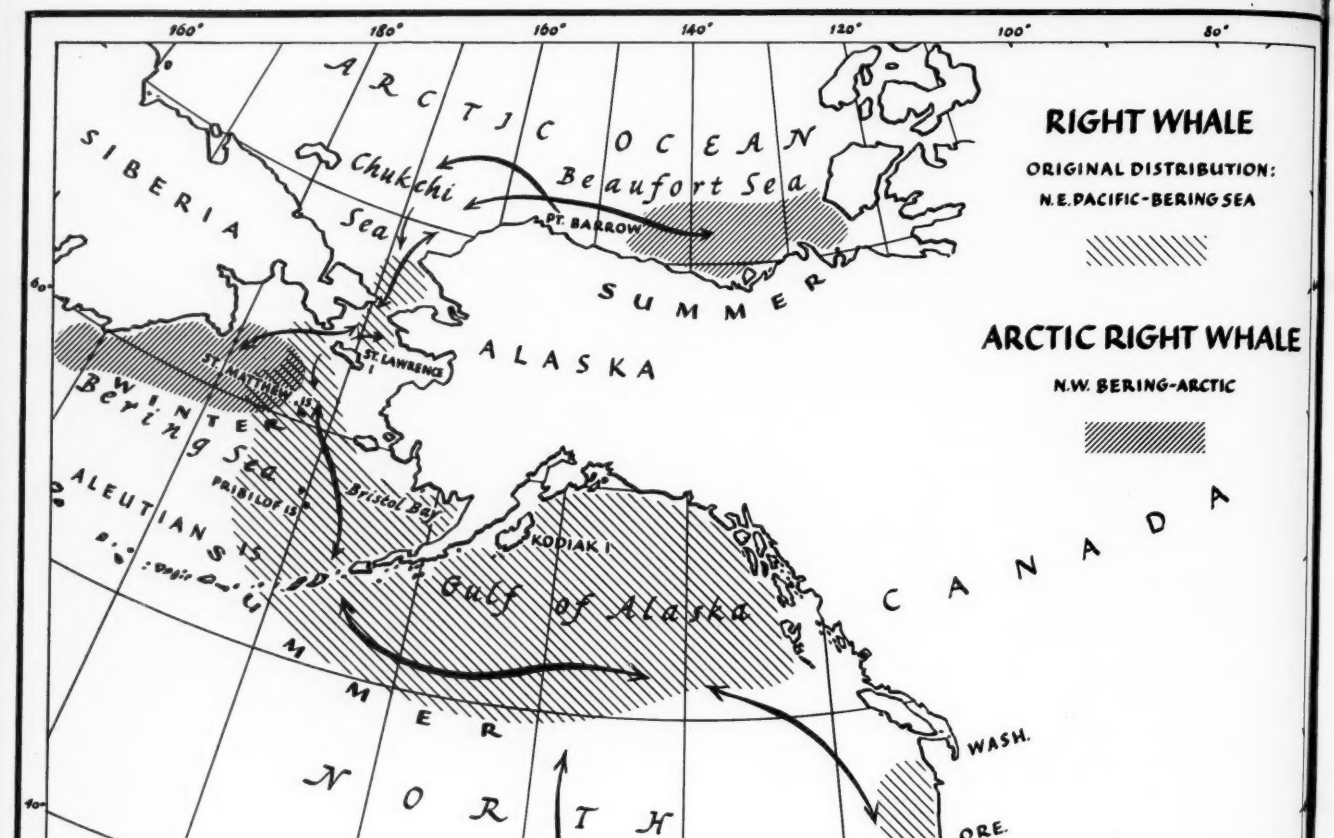
During the 1930's, the Civilian Conservation Corps recreated the mission settlement at La Purísima Concepción, repairing fountains and a cistern, reproducing the padres' old garden, and assembling many historic plants.

Now nearly all the missions have been restored. And, although their once vast properties are dispersed forever, each one still proudly treasures a few of the original trees, vines, and shrubs which so long ago mitigated the austerity of life in a new land.

Dark yews and cypresses frame façades of stone and adobe, ancient pears and olives soften old walls with moving shadows, grape vines festoon arcades and canopy pergolas, fragrant "roses of Castile" twine about gateways and colonnades, and palm trees rise like signals against the sky, still doing their part toward making each of the old missions in its simple way "as beautiful as a cathedral."



Assorted water jars at Mission Santa Ynéz. (Katharine Hooker, 1893)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180°
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ARCTIC OCEAN
Chukchi Sea
Beaufort Sea
PT. BARROW
SIBERIA
SUMMER
ALASKA
ST. LAWRENCE I.
ST. MATTHEW I.
WINTER
Bering Sea
PRIBILOF IS.
Bristol Bay
KODIAK I.
Gulf of Alaska
CANADA
ALEUTIAN IS
WASH.
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NORTH
PACIFIC
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San Simeon
La Jolla
MEX.
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CEDROS I.
HAWAIIAN IS
RIGHT WHALE
ORIGINAL DISTRIBUTION:
N.E. PACIFIC-BERING SEA
ARCTIC RIGHT WHALE
N.W. BERING-ARCTIC
PD-1956
D.C.K. AFTER R.M.G.

Rare RIGHT WHALE Visits California

WHALES MAKE NEWS, *and rare ones make special news. Such a rare whale is the right whale, also called the black whale, or the bowhead. The special news, in this case, is its visit to La Jolla, southern California, in 1955.**

THE RIGHT WHALE was formerly one of the commonest and most important of all the whales of the world. It, with the sperm whale, was the hub of the old hand-whaling industry. Like the sperm whale, the right whale swam slowly when at the surface and allowed close approach by rowed or sailed whaleboats. It floated when dead, thus permitting recovery.

It was world wide in distribution, and in the northeastern Pacific a large group concentrated in the summer in the Gulf of Alaska. These were called the "Northwest Whale" by the early American hand whalers, and were almost killed off in the latter half of the 19th century before their winter range had been well defined.

Captain Charles M. Scammon in his classic account of the whales of northwestern North America, published in 1874, mentioned that right whales "were found on the coast of Oregon, and occasionally in large numbers." Presumably this was in winter. Scammon made no mention of any right whales taken off the Hawaiian Islands, but he did state that some stragglers were captured off the California coast, down even as far as Sebastian Vizcaíno Bay in mid-Baja California where ends one of the last eddies of the vast north Pacific current of cold water with its associated species. Nor did C. H. Townsend, in his monumental analysis of the captures of whales by the early Yankee whalers, show the right whale as occurring off California or the Hawaiian Islands. (See references at end.)

We can postulate, accordingly, that the normal *winter* range of the Northwest right whale was off the coast of Oregon and possibly northern California, and that occurrences off southern California and northern Baja California were by stragglers only. This main winter range was never exploited by the whalers, probably because of inclement weather during that season, and because the right whale might have been more concentrated, and certainly was easier to get in the summer on the Kodiak grounds of the Gulf of Alaska and the adjacent southeastern Bering Sea.

Many whales, few of right kind

The coast of California is rich in whales, winter and summer, and has been heavily whaled since the 1850's, with a lull between 1890 and 1920. From 1850 to 1890 there were at least 15 shore stations from San Francisco to San Diego. Most of these stations operated in the winter season for gray whales; but this season, incidentally, is also the "right" time of year for the "right whale," although few were taken.

Fragmentary catch statistics from these early days, tabulated by David Starr Jordan in 1887, by C. H. Townsend in 1887, and by Edwin C. Starks in 1922, showed that at Point Sur in the winter of 1878–1879 one right whale was taken with three grays and one humpback (Jordan); at San Simeon in the winter of 1884–85 three right whales were killed along with 15 grays (Townsend, Starks); and that at San Diego a right whale was occasionally taken from 1850 to 1870, which was as long as the gray whales lasted (Jordan). More records will certainly be revealed by examination of old newspaper files of the whaling towns, but it is doubtful that the right whale will be found to have occurred commonly in the catches.

With the upsurge of whaling by steam catcher boats and steam reduction plants, together with the powder harpoon-cannon, in the 1920's and 1930's, some 3,000 whales were killed on the California coast; but among them was only one right whale, off the Farallon Islands in April, 1924. Most of these 20th century operations were in summer, however, the wrong season for the right whales, so most were surely missed. Even in this recent period, our statistics of the catches from the floating factories are not complete, and investigations may reveal other right whales.

Extinct in California? . . .

Thus, for all practical purposes, the northeast Pacific right whale was gone from the coast of California. In 1933, Joseph Grinnell in his *Review of the Recent Mammal Fauna of California,** said of the right whale: "Fairly common, formerly, along coast of California; but has not been reported since about 1885 when found near San Simeon."

And Lloyd G. Ingles, author of the recent *Mammals of California and its Coastal Waters,*† concluded that the right whale is "now very rare, perhaps no longer extant in California." Neither author knew of the 1924 capture.

. . . Then in 1955 . . .

And so we come down to March 31, 1955, when the next right whale was definitely seen off the coast of California.

On this day a whale appeared off the Scripps Institution of Oceanography in La Jolla. It came from the north, unlikely for any whale at this season when the grays were migrating in the opposite direction. It almost struck the piles of the pier, veered off seaward and turned north. Then, immediately reversing its course, it continued southward again.

All this was seen from the windows of the Scripps

*This article is published by permission of the Director of the U. S. Fish and Wildlife Service.

*Univ. Calif. Pub. Zool., 40.
†Stanford University Press, 1954.

Institution of Oceanography laboratories and classrooms, and the whale was quickly noted as different from a migrating gray, both in behavior and appearance.

With its turn south, I took up station at the whale watch atop Ritter Hall, built for gray-whale counting and for just such observations as this. Here I watched the whale through 18-power binoculars. It continued south close to shore but was soon blocked by Point La Jolla, a mile away. At this place, next to the Cove and cliffs, with many strollers and bathers watching, the whale for 40 minutes rolled, turned, fluked, loblolled with flipper out, stretched its back in a sinuous curve, and apparently examined the shore time and time again, with head partly out of water – yes, distinctly looked over the surrounding water and nearby land, as if trapped or confused by the curving shore line, and perhaps also by the deep "La Jolla" submarine canyon, over which it just passed.

All this maneuvering showed unmistakably that it was a right whale: the massive broad body; the smooth back without fin or ridge; the black, unblotched color; the wide flukes with sharp wing-tips; and especially the widely divergent double spout; the scabrous bump on the tip of the down-curved snout; and the huge lower lips which projected upward and partially overlapped the narrow, down-curved upper jaw.

Five minutes later a small boat swung out over the end of the Scripps pier and into the water. Into it jumped Don Lear, Eddie Arabelo, and myself, with cameras and outboard motor – the chase was on.

Speeding to the Cove, we arrived to find the whale gone, and so we immediately turned out to the end of the La Jolla kelp beds, a mile west. There we soon saw the double spout and the huge, smooth, black back of the whale. Then for 20 minutes we hung on its flank and flukes, 50 to 200 feet away, at a speed of five to six knots, which kept us close and gave us momentum to turn quickly had the whale done the same. We estimated its length to be 40 feet.

As if in response to this annoyance of motor and boat, the right whale breached eight times almost clear of the water, once five times in succession, and then three. At each jump, the whale's ponderous bulk rose slowly and majestically out of the water, belly uppermost with flippers outstretched like barn doors, and fell back with a tremendous shower of spray and white water. It was an extremely impressive show of size and power – I think the whale intended it to be.

That such jumping or breaching was a response to our invasion of the water, or to disturbance by our boat, is supported by a series of five jumps by this same whale a short time previously near the Cove when it was approached by a passing lobster-skiff. The gray whale is also a great breacher and sometimes can be stimulated to do so by approach of a small boat with motor running. At least this is true in these southern waters in winter during the gray whale's mating and calving season.

Finally the chase ended as the whale took off to the southwest, without visibly surfacing, as if deliberately to throw us off the track. Such evasive or furtive swimming tactics are common to whales when frightened. At such times they expose only the nostrils to breathe, without showing either the head or back. The breath is also released so slowly that it does not condense into a visible spout. Consequently, unless one's eye is right on the target, the whale can easily escape unnoticed.

He kept his big mouth shut!

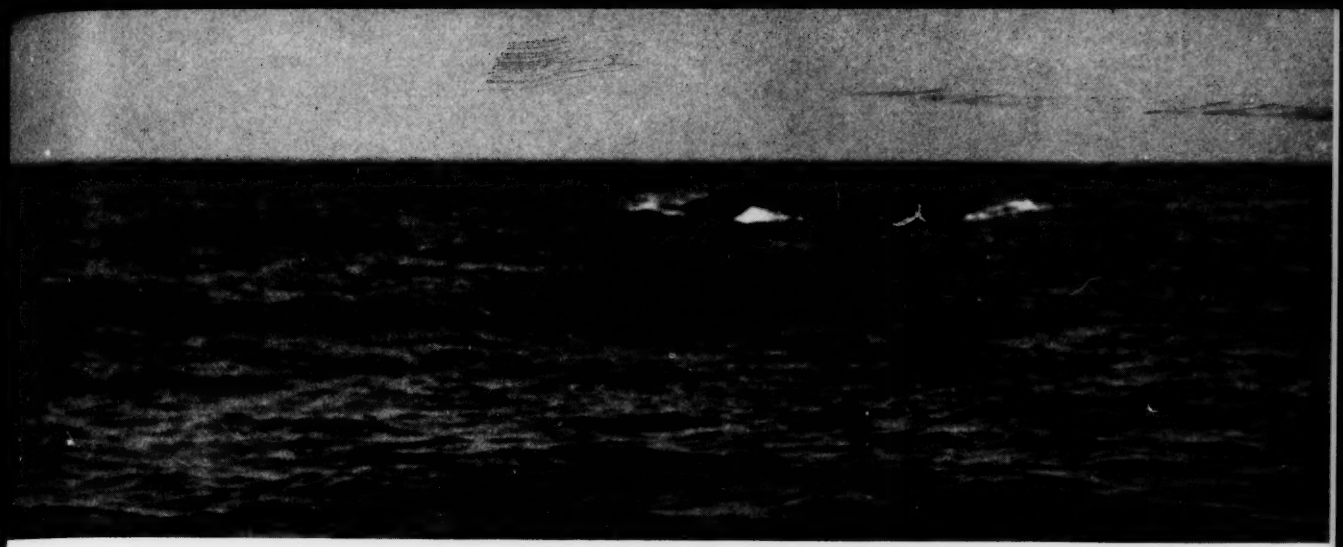
It was noted that the mouth of this right whale was closed at all times, though the figures in most books, reproduced year after year, edition after edition, show the mouth partly open. Such figures seem to have been drawn from dead and stranded individuals, in which the tongue was swollen, forcing the mouth open. Or perhaps the open mouth of the pictures is meant to show a feeding posture, which is certainly more like the figures.

Ordinarily, however, the right whale has the mouth closed, and this brings into view the high, prominent, thick lower lips which stick up on each side to overlap the down-curved, narrow upper jaw. This is such an excellent field character that, on the schematic drawing here appended, I have shown the mouth closed and lower lip high as we actually saw it. Recent photos of right whales at the surface on the east coast of North America also show a closed mouth and conspicuous lower lip.

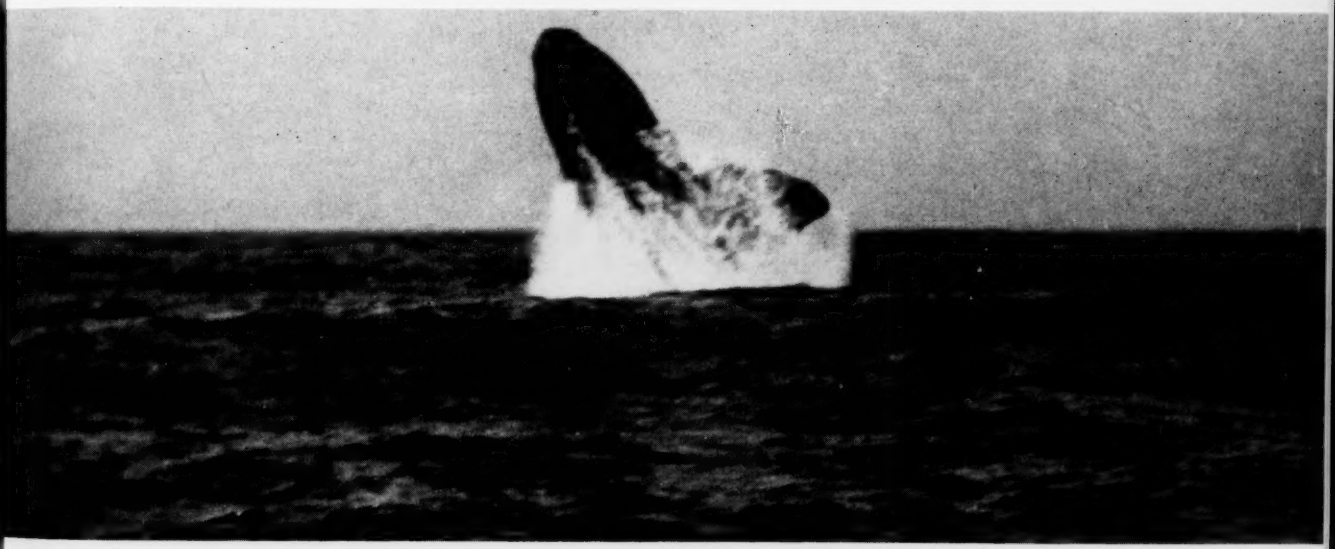
. . . A comeback?

This particular right whale was a very welcome sight indeed, and others perhaps were in the vicinity of San Diego in early 1955. On 14 January two volunteer gray whale-watchers, atop the lookout at Ritter Hall on the Scripps campus, saw four whales at a distance of 3 to 4 miles going southeastward. These whales were described as showing a distinct double spout, a smooth black back, and pointed, broad flukes. They were logged as "gray whales," a species which was then migrating south in numbers, and which also sometimes shows a faint double spout at close range from directly fore or aft, and also has no fin on the back. The double condition of the observed spouts in this case was too great for the gray whale, however, and the back and tail-stock were without the slight but easily visible ridge and sharp knuckles, and no clear patches of light, discolored areas were present.

In May 1951 the Western Whaling Corporation of Coal Harbour, Vancouver Island, shot a right whale by mistake, thereby adding to our knowledge of the distribution of the species farther north.



Pacific right whale at La Jolla, California, March 31, 1955. (ABOVE) Body rises to blow at close range. The peaked top of the head represents muscles bunched for the opened blowholes and its highness is typical of the bowed head of the right whale.



(CENTER AND BOTTOM) The whale breaches out of the water with back down, belly up. The flippers are apparently outspread in response to the challenge of a small boat with outboard motor. (U. S. Fish and Wildlife Service photographs by Dr. Raymond M. Gilmore)

Field sketch of the right whale's head peak.

(ABOVE) Whale lolling on its side. (BELOW) Curving the back with snout and tail stock out of water.

Though the right whale will never become common off southern California because this area is outside the normal range, it is reasonable to look forward to a repopulation of the Oregon coast and perhaps that of northern California, with stragglers from year to year farther south.

Around the world, a whaler's whale

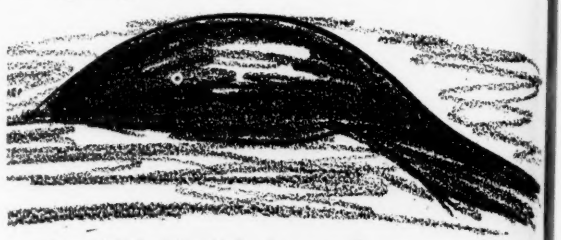
To return to the world-wide distribution of the right whale and its historical importance: There was a large European group which wintered in the Bay of Biscay and summered around the Shetlands, Orkneys, and Norway. In Biscay Bay it was the object of the *first whaling industry,* that of the Basques, starting during the 11th century, or possibly even the 10th. At this time the techniques of hand - harpooning and lance-killing were perfected, though for centuries or millenia, similar techniques had been used by primitive man such as the Eskimo. However, the Basques also held onto their whales with the harpoon line attached to the small boat, a distinct improvement over the technique of floats on the line as used by primitive man.

The products of the right whale were the great quantities of clear and limpid oil, rendered ashore. This oil was used for illumination and cooking. The long, fine-fibered and silky-fringed baleen or whalebone was also prized, being used to stiffen certain undergarments the ladies wore even then.

Off the coast of eastern North America, in the western North Atlantic, another group wintered from Long Island to Florida, and summered on the Grand Banks of Newfoundland to Iceland. Our Yankee forefathers cut their whaling teeth on this group, pursuing it relentlessly from 1650 to 1750 with the same techniques of the Basques. The last hand shore-whaling for the American right whale was on Long Island in 1918.

With the early decline of this local group, pelagic whaling was adopted by the Yankee who took to the oceans of the world in search of the right whale and the sperm whale. These Yankee forefathers of ours would stay at sea for one, two, and even three years, trying-out the whale oil aboard ship. The pelagic techniques had been developed also by the Basques, and had been perfected by the English in their pursuit of the Arctic right whale.

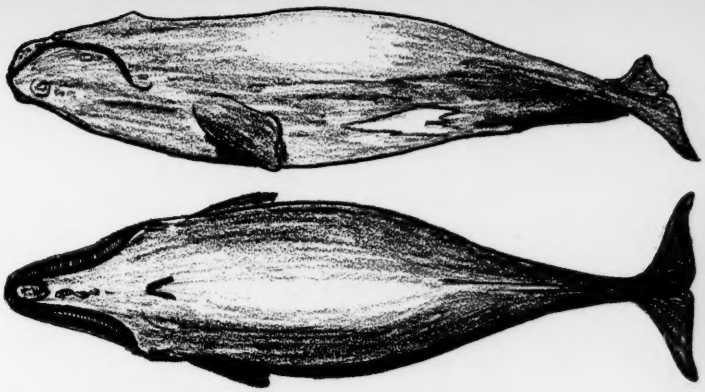
The pelagic whaler first worked the oceanic summer feeding grounds of the south Atlantic: the Brazil and False banks and Falkland Grounds off southeastern South America; then across the ocean through the Pigeon Ground, the Tristan Ground, South African Ground, and to the Woolwich Bay Ground on the southwest coast of Africa. From here the whalers penetrated both the Indian and Pacific oceans, whaling the grounds of Delagoa Bay, off southeastern Africa; the Crozet, Desolation, and Indian Ocean grounds near the subantarctic; the Coast of Chile Ground; the Kermadec Grounds northeast of New Zealand; the New Zealand Grounds; the Coast of New Holland Ground off southwestern Australia; Sea of Japan, or Korean, Ground; the Okhotsk and Kamchatka grounds; and finally the Kodiak Grounds – which brings us back to the beginning of our story.



Base of tail rolling high when sounding — flukes not thrown on this occasion.

Some of these grounds are oceanic, other insular-oceanic, others coastal; it all depended on the season, the activity of the whale, whether breeding or feeding, and the fertility of the water mass if it was a feeding ground.

By a freak of economic forces the right whale and its close cousin, the Arctic right whale, were almost completely exterminated, which would have been the first such case for a pelagic mammal in history. Before the invention of springy, light, and stainless "featherbone" steel about 1910 that replaced the whalebone slips and fibers in foundation garments and heavy silks, the demand for the natural product rose to the fantastic heights of $5.00 to $7.00 a pound. This raised the value of a single adult right whale, yielding perhaps 1,500 pounds of "bone," to the point where but one or two whales would pay for a voyage. As a result, almost the last of them were hunted down relentlessly. Ordinary economic forces, which would have made it unprofitable to go to sea for such a small catch, were in this case ineffective. "Featherbone" came almost too late. Now, thanks to the world-



Schematic drawing of right whale based on photos and field observations. (Raymond M. Gilmore)

wide protection afforded by international law, right whales are increasing, though their numbers are still small.

There is a theory that reduction in size of a population of wild animals, or of the species itself, to a certain critical, low level, but still considerably above that of the last male and female, causes reproduction to cease or to slow up so that the group in question becomes extinct.

This level may be called the "threshold of populational survival," or the "threshold of extermination." It has been called the "minimum population." Its position is obviously difficult or impossible to determine in nature – until it is too late to save the species. Nevertheless, the populations of the right whale, by the freak of economic forces above described, demonstrated that this level can be extremely low, and that perhaps only a few score individuals in this case saw the species through the crisis of near extinction. Male managed to meet female, or group to remain in contact, despite the great expanse of ocean which they made their home.

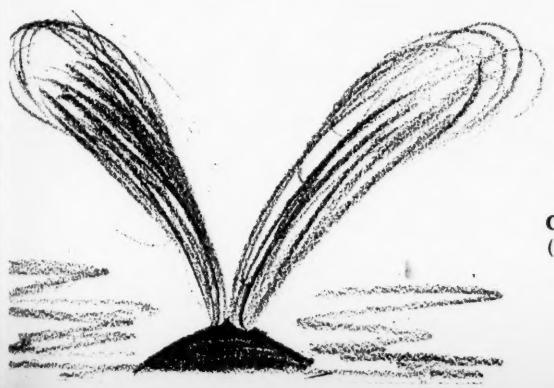
Recovery of the right whale to former levels of abundance will take many years. The right whale is still scarce, despite the long time elapsed since whaling for the species ceased, and the shorter time of complete protection.

Whales as oceanographers

The right whales were attracted to their summer grounds along the coast or in mid-ocean by rich pastures of concentrated small animals, or zoöplankton, such as pelagic shrimp and copepods. These tiny creatures were themselves concentrated there because of fertile water, enriched by currents which bring high-nutrient subsurface waters to the surface layers. Certain coastal spots where upwelling occurs also have rich waters. The Kodiak ground is the site of the slow but enormous Alaska or Kodiak Gyre; the southeastern Bering Sea of the small Bristol Gyre – both summer feeding grounds of the "Northwest Right Whale." In the winter season, however, when whales are breeding, feeding appears to play only a secondary role in choice of locality.

It is to these fertile areas of the ocean that man is now turning for his marine resources, particularly food. And, whales in summer in large numbers may indicate just such areas. Knowledge of the species of whales and of their favorite food enables the oceanographer to gain a quick understanding of the nature and location of concentrations of organisms in what appears to be, to the untrained eye, huge and apparently uniform areas of ocean. The early whalers were among the first true oceanographers. Whales are even better oceanographers than whalers.

Oceanography has recently developed mainly along the lines of indirect observation, by complex instrumentation, of things hidden from our sight. With the resumed interest in whales, these very obvious inhabitants of the ocean can once again take an important role in the science of the sea.



Characteristic V-spout of right whale. (Sketches by Raymond M. Gilmore)

References

STARKS, EDWIN C. 1922. "A history of California shore whaling." California Fish and Game Commission, Sacramento, Fish Bulletin 6, pages 38, figures 22. Starks presented a valuable summary of the shore whaling stations and their catch in the early days. The fragmentary nature of these data was partly unavoidable; we scarcely know more today. A perusal of old newspaper files and personal letters of pioneer California whalers by anyone today will certainly reveal details which will fill in the gaps.

TOWNSEND, CHARLES HASKINS. 1887. "Present condition of the California gray whale fishery." Bulletin of the U. S. Fisheries Commission for 1886, volume 6, pages 346-350, plates 6 and 7. Townsend was one of the giants of the early investigations on marine subjects, and in 1886 made a visit to California to see shore whaling of the California gray whale at first hand. He spent most of his time at the station at San Simeon, where Captain Packard, the owner, gave him much information, that included the capture of a right whale as mentioned in the present paper.

TOWNSEND, CHARLES HASKINS. 1935. The distribution of certain whales as shown by logbook records of American whale ships. *Zoologica*, Scientific Contributions of the New York Zoological Society, volume 29, number 1, pages 50, figures 2, plates 4 (maps). Published on 3 April. When almost 80 years of age, Charles Townsend published, with the help of Mr. Arthur C. Watson, then of the Whaling Museum of New Bedford, the mapped distribution, by month, of the captures by the Yankee whaling ships (as shown in their logbooks) of 53,879 whales, of which 2,118 were right whales. This was a magnificent study and, when properly used, with a realization that only four species were represented and that other grounds have subsequently been or were previously exploited, can be fitted accurately into our present knowledge of whale distribution.

ANNETTE H. RICHARDS

Our Busiest Bear

ONE OF THE BUSIEST BEARS in history is Smokey, the fire preventin' bear, resident of the Washington Zoo. He is no ordinary zoo inmate, for although he may hibernate, as all good bears should during the winter months, come fire season and he is right in the thick of the Forest Fire Prevention Campaign. And even though he is only five years old, he is a Very Important Person. He has reason to be proud of himself, too! He looks sternly down on the American public from carcards and billboards, from the pages of magazines and newspapers, he gives personal appearances, and he is a television star. Not only is his bear face familiar, but it stands for something specific and important – forest fire prevention.

He can be proud not only of his personal popularity but, more important, of his record. As spokesman for one of the most successful high-powered advertising campaigns ever put on for the public welfare, he can say with a certain degree of satisfaction, that America has reduced her annual average of forest fires from 210,000 in pre-World War II years to 185,000 now. This means that 25,000 fewer fires consume this valuable natural resource in disastrous ruin and that millions and millions of acres of our forest lands have been saved.

A major reason for Smokey's effectiveness is that he points out to people that not only inanimate timber is destroyed by forest fires but that animals like himself are consumed in agonizing death in these same conflagrations. The appeal of animals is strong to the human heart. Having won your sympathy and interest, Smokey follows up with the simple fact that, since most fires are man-caused, "only *you* can prevent forest fires!"

But with the war at an end, Americans would be returning in greater numbers than ever to their parks, forests, and lakes. Hence the hazard of human carelessness, kept at a minimum during the war, would sharply increase. The job ahead was even more serious. And this is where Smokey entered the picture to lend a helping paw.

In 1945 Smokey came to vivid life under the artistic hand of *Saturday Evening Post* illustrator Albert Staehle, and he caught the public imagination at once. Into Smokey and his animal predecessors have gone nearly 30 million dollars worth of donated advertising, given by businesses and industries of the land as a public service. The advertising world has done itself proud in broadcasting forest fire prevention through all available media.

After carrying on alone for five years, the familiar poster character in ranger hat and levis got help from the five-pound bear cub that nearly lost its life in a New Mexico forest fire in May 1950. This little fellow was found clinging to a stump in the midst of 17,000 charred acres of the Lincoln National Forest where ten million board feet of timber went up in flames. He was the lone survivor. His parents were lost, and three of his paws had third degree burns. Nursed back to health, he suddenly came into the limelight, went to Washington, and has been a public figure ever since.

Yes, Smokey is a very special bear. He is such an important citizen that a 26-foot monument costing $4500 has been erected in his honor and image at International Falls, Minnesota. And this summer, as more people than ever overflow into the nation's woodlands, they should have learned that these prized areas are to be enjoyed with responsibility. Smokey has shown them graphically just what they should do with matches, cigarettes, campfires and brush fires. In case they forget, Smokey's Junior Forest Rangers are on the job policing their parents!

Thanks to this friendly, intelligent bear, America is beginning to practice ordinary common sense in its outdoor manners and precautions. It is respecting nature's hospitality.

Not that the battle is won, nor that Smokey is satisfied. But he has made a start that any firewarden, human or animal, should be proud of.

Smokey, Jr., and his daddy.

YOUTH IN SCIENCE

Mountain Ranges Their Museum Walls

VORSILA L. BOHRER

Girl Scout field party at Chimney Rock, Colo.

CLOUD-PILED DESERT HORIZONS and Rocky Mountain ranges are museum "walls" every summer to a lucky group of teen-age girls. They are Senior Girl Scouts, selected from all over the United States as members of the Senior Girl Scout Archaeological Camp. The theme of their open air museum is "Man and Nature in the Southwest"; the "curator" in charge is Dr. Bertha P. Dutton, Associate in Archaeology and Curator of the Department of Ethnology at the Museum of New Mexico, Santa Fe.

Carried out through wide ranging mobile camps, the program of youthful study and field work in archeology is designed to help sustain interest in scouting past the 18-year age limit, until the girls are old enough to take active troop leadership or assume other adult duties in the nation-wide organization. Each year the route of the rolling camps is changed so that girls who are stimulated by their first expedition can come back in succeeding years for new experiences.

A rigorous schedule in 4,000 to 11,000-foot altitudes calls for top-notch health – from camps along the way there are hikes over lofty terrain of rugged rock and roaring water; there is digging in ancient sites under the desert sun, for veterans, later, in the Senior Girl Scout Archaeological Excavation Camp.

The Mobile Camp halts nearly every night in a different location. The scouts enjoy their evening campfires and wake fresh each morning in surroundings marked by the varying trees and plants typical of life zones from the Hudson Bay region to northern Mexico – all within our own Southwest. In this setting, diversified by altitude, the story of the Indian, the Spaniard, and the Anglo* is illustrated by archeological sites, modern Indian pueblos, and Spanish-American villages. The Senior Scouts are attentive listeners and competent note takers as the "Man and Nature" story unfolds.

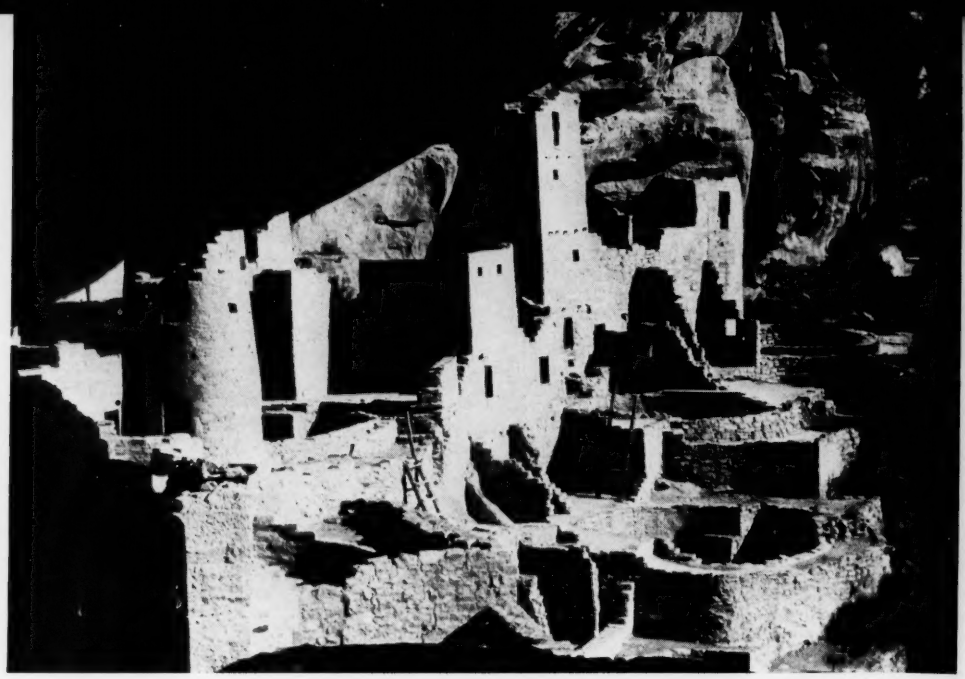
To begin the two-week tour, the girls are acclimated to Santa Fe's 7,000-foot elevation, taking a couple of days to brush up on tent pitching, axmanship, and other camping skills needed on the trail. Then comes a day in Santa Fe at various units of the Museum of New Mexico – Museum of International Folk Art, Laboratory of Anthropology, Palace of the Governors, Hall of Ethnology – and the regional headquarters of the National Park Service. These treasuries of history, science, and art give the girls some background in the story of nature and of man in the region they will explore.

This past summer the itinerary included visits to Aztec National Monument, Mesa Verde National Park, and the Rocky Mountain area near Ouray and Silverton, Colorado.

In the Rio Grande area the scouts watched the excavation of a small developmental pueblo (c. 600-1200 A.D.) near Tusque, New Mexico. They explored Te'ewi, a larger mesa-top pueblo ruin dated c. 1300 A.D., where the girls learned to recognize the faint outlines of an ancient settlement and depressions indicating abandoned dwelling rooms and underground ceremonial chambers or *kivas*. They gathered broken pieces of pottery, *potsherds* as they soon learned to call them. These illustrate the different types and forms of pottery produced and traded; the styles are good indicators of the period producing them.

This outdoor museum, with all its splendid exhibits, is conservative in her labels, and so it is the director who aids the Senior Scouts in reading the history of bygone fires which may show camping or dwelling locations, or the methods of roof construction from

*A Southwestern term for all racial elements that are non-Spanish and non-Indian.



Cliff Palace, Mesa Verde National Park, Colorado.

chunks of roofing clay burned red, or of an Indian fashioning a point for a dart or arrow from small flakes of volcanic glass or chalcedony. Thoughts run

Scouts digging for fossils at Giusewa, Jemez State Monument, New Mexico. Also typical of potsherd hunters.

to how a village might be defended, to where the people obtained building materials and water, and where they raised their crops — problems readily comprehended by these seasoned campers. Following such discussions every mobile camp attempts to bring to life these abandoned pueblos by visiting a modern pueblo (and wherever possible a colorful ceremony) and including in each mobile camp an Indian Senior Girl Scout from the area.

Each new site observed gives the girls added perspective and judgment. They are aided by specialists in the various sciences, traders, and others who go out of their way to supply information and seasoned guidance for this purposeful group of mobile campers. At Aztec National Monument the camper group was dwarfed beside the Great Kiva or Sanctuary, but the questions from this alert gathering filled the large structure. At Mesa Verde the architectural development from Basket Maker pit houses to pueblo-like storage and living areas was illustrated by a series of guided mesa-top tours. A visit to the classic ruins of Cliff Palace and Spruce Tree House (c. 1200 A.D.) was the climax to the Scouts' Pueblo Indian studies.

The mountainous area of Ouray and Silverton, Colorado, held many exhibits of geologic interest. With footwork and careful searching these young people got samples of quartz and calcite crystals and specimens of azurite and zinc — but no gold. Deserted houses,

Busiest people in camp.

Senior Scouts excavating an ancient kiva at Pueblo Largo, N.M. (Kafen photo, Santa Fe)

empty false-fronted stores, and blacksmith shops were silent evidence that the gold boom of the 1880's was short-lived.

At Pecos, New Mexico, the thick sun-dried adobe walls of the crumbling Spanish mission quieted the group in wonder. Here was a towering example of the continuance of Pueblo culture into Spanish times (until 1838). Near the foot of the Sangre de Cristo Mountains in the sun-drenched village of Chimayó, the Senior Scouts visited one of the shops of the Spanish-American weavers and watched the weaving on an old treadle-type loom with keen interest. Beyond Chimayó, higher in the mountains, the hard dirt streets of Córdova were heavily gullied by summer downpours. Here the Scouts made their way to the modest home of George Lopez, known far beyond his tiny Spanish-American village for his woodcarving.

Immediate benefits from such trips seem to be a tan, an extremely healthy appetite, and a new vocabulary with archeological terms such as kiva, basketmakers, projectile, and potsherds. After returning home, campers realize the understanding they have acquired of other cultures and find a continued and growing interest in man and nature. Large numbers have returned for another on-the-trail camp, and still another. There are many who come back at the end of a busy summer to join the Senior Girl Scout Archaeological *Excavation* Camp. Here experienced Senior Scouts or Associates (many college students) join forces for two weeks of pick, shovel, rock heaving, cataloguing, and toothbrush-fine work in the Galisteo Basin south of Santa Fe. Here a pueblo ruin dating around 1300-1500 A.D. is being excavated to obtain evidence as to whether or not Pueblo people from the Mesa Verde region moved into the Rio Grande area in late prehistoric times. All items are carefully recorded in the field, catalogued in the laboratory tent, and deposited in the Museum of New Mexico. Laboratory work, woodchopping, and regular excavation procedures are shared by daily rotating groups of girls. An excellent cook is on hand at all times to care for limitless appetites, and a tankful of water and numerous wash basins are available to erase the day's dirt.

The tenth anniversary of this outdoor museum program sponsored jointly by the Girl Scouts of the United States and the Museum of New Mexico will be celebrated in the summer of 1956. Because of this camping project many girls have taken college courses in anthropology and have acquired a deeper understanding of human problems. A large majority of the first campers are now Girl Scout leaders, wives, and mothers who are better citizens for having participated wholeheartedly as teen-agers in the outdoor museum—without limits.

Anthropology of whaling

Follow the Whale. By Ivan T. Sanderson, Little, Brown and Company, Boston and Toronto. 1956. xxiii + 423 pp., endpaper and text maps. $6.00.

"At the age of nine," Ivan Sanderson tells us, "I performed the spectacular but rather pointless feat of wriggling through the main artery of a seventy-foot whale into the heart of the animal to entertain a group of Norwegian and Sheltie flensers at a shore station in the Shetlands." While thus making the point that "whales are just so big you cannot appreciate them even when you see them" (the bigness of whales and the romance of whaling perhaps together explain the popular appeal of the subject of this book), the author of *Follow the Whale* also hints something of his own whaleman background. Earlier he had spoken of "the dark-haired, sallow-skinned, narrow-faced people of the lochs and isles of the west coast, the same stock, basically, as the Black Irish, the Cornishmen, the Bretons, the original stock of Portugal, and also those neolithic peoples of Scandinavia who left us records of their whaling exploits engraved upon the faces of rocks in Norway eight thousand years ago. . . . A maritime race of fishermen and boatbuilders, . . . they originally lived in round houses with walls made of boulders, whales' ribs for rafters. . . . My family had some of these for storing seaweed for manure, and the foundations . . . were probably laid down before the Romans reached England. . . . These 'Black' Scots, or . . . Picts [the dread Painted Men who spiked Rome's northward march], have always been the boatbuilders of Scotland and seem, in fact, to be the main source of that breed of engineers" the country is noted for, comprising "a very high percentage" of the engineering personnel of the modern whaling fleet—and building it, too.

Ivan Sanderson, zoölogist and author, follows the whale quite naturally, then, as one of a breed which has led the chase since the earliest recording of it we know. The extent of his immersion in cetology may be gleaned from his dedication "to my small wife, Alma, in memory of three happy weeks spent on a very dead sperm whale." Man and boy, he got to know the whale inside and out before writing of it. He also had to grasp a fair chunk of human history and prehistory and know his way around in the archives of cultural anthropology. For whales and men have played a sort of harmony together at opposite ends of a harpoon for at least 16 thousand years, if we correctly judge certain roughly datable artifacts of the Iberian coast from their size and obvious use, together, as implements for nothing less than whaling. The first man to harpoon or otherwise kill a whale thrust mankind forever into the natural history of whales, as the first and only predator on whales at large, just as killer whales have always preyed on other oceanic whales.

For most of us this book will greatly broaden our view of both whales and whaling. The known fossil record goes back only sixty million years. The ancestor of all whales was probably a land mammal living on tropical lake or river banks (a giant otter, the *saro*, alive today in South America's tropical forests, has become so nearly aquatic that its stump-legs cannot support it on land). The putative, still unknown ancestor gave rise to many and widely varying kinds, extinct and extant — an appendix here illustrates 51 of some 100 living species, from the largest rorqual, the blue whale (record 113 feet, average adult 90 feet), to the smallest porpoises and platanistids (5 feet).

Whaling likewise evolved from something dimly seen and simple to a world-encircling and thoroughly documented complexity. Very early man doubtless first learned of whales from stranded ones. Stone Age kitchen middens contain whale bones. But that Stone Age man hunted porpoises from boats with harpoons and lances is proven by the work of Stone Age artists — the graphic record is clear and detailed. With this beginning the historical structure of the book takes shape, and we are brought down through the several ages of whaling as practiced by various peoples. At each stage we are told enough about the particular ethnic group to understand why it naturally took to whaling and came to contribute its particular talents and techniques to the art. Always central to the theme is the age-old human need for oil, for heat and light.

With the pattern set, of shore-dwelling man so early and naturally becoming whaleman, it is hardly a surprise to learn that cuneiform inscriptions tell us how the conquering Assyrian King Tiglath-Pileser found on reaching the Mediterranean that the Phoenicians had "a fully fledged whaling industry," and his royal self "boarded a Phoenician whaling ship . . . and . . . went to sea in pursuit of whales." Thus, from 1100 B.C. "the earliest written record of a whaling enterprise."

After some entertaining speculations on the Jonah story, we next see the Minoans of Crete as whalers and such savants of the Greco-Roman period as Aristotle, Strabo, and Pliny the Elder as eloquent if not wholly credible cetologists. Long the everyday concern of practical, illiterate men, whales were becoming part of the lore of the world accumulated and preserved by civilized society; but we may stand reminded by this book that the whales are still the least known major animal group — many vital facts of their natural history are a total mystery today.

The scene shifts next to the North Atlantic and its seas bordering the Arctic, with Norsemen the actors; thence to old Nippon; and again to the Atlantic, where at the end of the 16th century the Basques became the founders of modern pelagic whaling — after generations ranging out of Biscay Bay — through Capt. François Sopite's great experiment of shipboard trying-out of the oil. This had first to have a ship able to carry the try-works and necessary gear (fascinating are descriptions of the varied craft in which men have followed whales).

Names are few in this history: after Sopite, "the other great discoveries that altered whaling practice were those of Captain Christopher Hussey of New England, who initiated sperming a century later, of Svend Foyn of Norway, who invented the harpoon gun in the middle of the nineteenth century, and, finally, of Captain Carl Anton Larsen, who built the first real factory ship in 1923." These span the ages of Dutch and British whaling in the Arctic; of the British in the Antipodes spearheaded by the famous firm of Enderby; of the Yankee enterprise whose traditions and romance Melville told into our national heritage; of the modern resurgence of the power-armed Scots and Norse which brings us to the present era of the most intensive whale-slaughter the world has ever known, the most complete exploitation of the whale as profitable resource.

The present foreshadows the future. International management and conservation of the resource was forced by the threat of its rapid destruction: it was seen just in time that the earth's grandest living creatures could be exterminated before we had time to learn the facts of their life. Sanderson concludes his intensive yet well-paced and sweeping history of whales and men with the warning that even the present enlightened quota system for harvesting the great whales is no assurance of an unending yield in the lack of certain basic knowledge of whale population pressures, tensions, and breeding limits and potentials which can only be gained through a high order of biological-oceanographic research. May this be done before it is too late. The future of the whale is up to mankind. D.G.K.

The "Romans" of the Andes

Highway of the Sun. By Victor W. von Hagen. Duell, Sloan and Pearce, New York; Little, Brown and Company, Boston and Toronto. 1955. 320 pp., 32 pp. photographs, 4 maps. $6.00.

In October 1952 the editorial office of *Pacific Discovery* received a press release from the American Geographical Society of New York, which began: "The most novel and one of the most ambitious archaeological and geographical expeditions of modern times will begin when Mr. Victor von Hagen leaves for Peru. In cooperation with the Society, Mr. von Hagen will direct an intensive two-year study of a forgotten and almost incredible world, the thirteenth-century highway of the ancient Incas whose remains still stretch for ten thousand miles along the west coast of South America. . . ."

Between this typical institutional announcement and the appearance of Mr. von Hagen's book more than three years later lies the reality of the expedition. A sometime field hand himself, the reviewer enjoyed the reality which he savored from the narrative, something which can never be extracted in essence from press announcements, seldom from rewrites of field dispatches, only sometimes from the expeditioner's book.

Mr. von Hagen's narrative comes off partly because he is a workmanlike writer with a dozen and a half books behind him, but chiefly, we think, because he is no tyro in the field either, and the Inca Highway Expedition was the successful outcome of careful planning and intensive preliminary research in historical sources. He and his young wife Silvia and their small party knew what they were looking for and how to recognize it when they saw it — and time and man have in many places all but erased the Inca Road from the Andean earth. Often they had to jibe an old Spanish chronicle with the most obscure landmarks. A scholar's approach with good hard field work did it, and they could link road and ruin to reconstruct a powerful empire like a palimpsest on the modern map.

A specially stirring chapter to many will be that in which von Hagen tells the story of one of the most vital links in the Incan system, the suspension crossing over the terrible Apurimac gorge which Thornton Wilder immortalized as the "Bridge of San Luis Rey."

Highway of the Sun is a straightforward record of solid achievement in New World history and geography, and the American Geographical Society we feel sure must not regret having lent its great prestige to the enterprise.

DISCOVERY IN BOOKS

On living by the spade

A NEW DEPARTMENT *appears in this issue of* Pacific Discovery, *"Youth in Science." It is a long-standing policy of the California Academy of Sciences to encourage youthful interest in the natural world around us, at any age. We trust that the Girl Scouts, young ladies of high school and college rank, who march afield under our new banner in these pages, will bear with something not impertinent we are reminded of. The Academy's director* (PD's *managing editor*) *has stated in a dignified annual report of the institution that "the most important visitor to the Academy is a small boy with a frog in his pocket." Since the Senior Scouts of our article in preceding pages came home from a glorious Southwest summer with potsherds in the pockets of their jeans and a new fascination with the stories of earlier peoples in their minds, we would mention here several books that may help carry their interest into other summers and coming years.*

Some titles we have at hand are wonderfully descriptive of what those Scouts did. First, they got right **Down to Earth** (*A Practical Guide to Archaeology,* by Robin Place; Philosophical Library, New York, 1955; xvi + 173 pp., many photos, drawings, and charts; $7.50). Although concerned with work in Britain, this book explains principles, as suggested by its chapter groupings under (I) The Use of Finds to Reconstruct Everyday Life; (II) Archaeological Excavation; (III) Dating Britain's Past — the latter showing how archeological and geological time scales are correlated. This book is recommended for somewhat advanced students whose interest is set toward serious study.

The object of their digging was **Discovering Buried Worlds** (by André Parrot; Philosophical Library, New York, 1955; 128 pp., 30 photos; $3.75). In this first English edition of his recent book, a French archeologist of the Near East describes at first hand the re-emergence of a buried city, outlines the past century of archeological exploration, and summarizes five thousand years of the civilizations that gave us ours.

Discoveries make possible our **Piecing Together the Past** (*The Interpretation of Archaeological Data,* by V. Gordon Childe; Frederick A. Praeger, New York, 1956; vii + 176 pp.; $3.95). Under a rather highbrow subtitle, one of the world's eminent students of the human past answers simply enough for any thoughtful college student such basic questions as What is Archaeology About? What is "The Archaeological Record?" What Happens in Prehistory? What is the Good of Archaeology? — to name some of his chapters. On such a framework Dr. Childe constructs and disposes the elements of his science in a way to show the newcomer clearly how he will handle and think about the physical and philosophical materials that comprise modern archeology. The author's drawing upon European examples makes this work no less valuable to an American student, who may well range the world in his — or her — career.

What is it like to be an archeologist? We may glean from many autobiographies that those people whose life work has been the bringing to life of the dead past are themselves keenly alive, many-sided, and as happy in their chosen work as it is given to anyone to be. Take, for one, **Still Digging** (by Sir Mortimer Wheeler; E. P. Dutton & Co., New York, 1956; 236 pp., 17 photos; $4.00). Called "the greatest archaeologist of his day," this versatile Englishman has packed into a 45-year scientific, administrative, and military (through both world wars) career enough adventurous experience to make several average lifetimes. Past and present history shade and mingle in lively narrative, and a captivating personality emerges from the matrix of stirring events.

A very different but no less eventful career is relived in **Tombs, Temples, and Ancient Art** (by Joseph Lindon Smith, edited by Corinna Lindon Smith; University of Oklahoma Press, Norman, 1956; xv + 349 pp., 47 illustrations from photos and the author's paintings; $5.00). Born in Rhode Island, Joseph Lindon Smith died in 1950 at 86 as one of the world's foremost archeological artists. His story covers an era of the most intensive work in ancient Egypt, the Middle East, and Mayaland, during which he knew and worked with all the leading archeologists of his time. But actually it is a story of people, living persons dedicated to the rediscovery and understanding of how other people lived in times long past yet continuous with our own. From such books as these one may learn what archeology is, as science, and as way of life — a good way, we think. D.G.K.

More reading for the road

The Handbook of Wilderness Travel. By George & Iris Wells. Harper & Brothers, New York. 1956. x + 306 pp., map. $4.00.

If you are thinking of seeking some of our all-but-lost wilderness to hike, pack, camp, or canoe in this summer, it may surprise you to find a choice of more than 300 separate areas from Maine to California, the Keys to Puget Sound, to choose from. And you now have this excellent, amazingly complete guidebook to them all (including trails and canoeing waterways) to help you decide where to go to find the sort of wilderness you want and can afford to reach and travel in, how and when to go, and what to take with you. Our only misgiving in unreservedly recommending the Wells' book is that it will materially reduce the solitude value still to be found in some of our wild areas!

This Mill Valley, California couple have also produced out of their own experiences of the road *The Handbook of Auto Camping* and *The Auto Camper's Guide to Canada.*

How to Enjoy Your Western Vacations. By Kent Ruth. University of Oklahoma Press, Norman. 1956. xvii + 422 pp., 75 photos, 17 maps. $4.95.

A veteran traveler and travel writer, Kent Ruth has compiled a guidebook to everything worth seeing west of the Mississippi that should be of great value even to other experienced vacationers. Especially designed for the motorist, it has appended information for rail, air, and bus travelers besides.

Mission days, dawn to dusk

The Mission Indians of California. By Sonia Bleeker. William Morrow & Company, New York. 1956. 142 pp., illus. $2.25.

Among the Morrow Junior Books a dozen or so by Sonia Bleeker tell of various Indian tribes or groups of tribes following a certain way of life. *The Mission Indians of California* centers around the tribe whose misfortune it was to give up the land and labor to build the Mission of San Diego de Alcala, thereby earning the name Diegueño and within about four generations losing besides their identity their very existence. Built on the 100-year life of Little Singer, such story as appears is vehicle for recounting the life and customs of southern California Indians before 1769, showing from their tribal and individual point of view the shattering effect of the white invasion upon them, and their twilight days as "Mission" Indians. The author is plainly sympathetic to the Indian as protagonist, but without becoming maudlin. The line is, this is what happened – let it speak for itself. It's the honest approach to history for young readers or any other. The text, by the way, was "experted" before publication by Prof. E. W. Gifford, University of California anthropologist.

The Last of the Conquistadors: Junípero Serra *(1713–1784).* By Omer Englebert. Translated from the French by Katherine Woods. Harcourt, Brace and Company, New York. 1956. ix + 368 pp., 18 illustrations. $6.00.

An adequate modern biography of Junípero Serra, based on that of Francisco Palou but with scholarly interpretations and amendations from other sources, has long been needed. We are not qualified to say this one by another Franciscan is it—the venerable historian of California and Arizona missions, Father Zephyrin Engelhardt of Santa Barbara, may now have an exhaustive work in preparation –but we believe that this handsomely produced book will stand for a long time on its merits as a first-rate literary treatment of the Serra story. We frankly hope our editorial effort based upon it will make many *PD* readers go and get it for their certain delight and further education.

Fray Junípero Serra: The Great Walker. By MacKinley Helm. Stanford University Press, Stanford, California. 1956. xv + 86 pp., frontis, portrait. $4.00.

This must be a Serra year! Call it poetic drama, symphonic biography, or whatever, this stylized rendition of Serra's apostolic life may be read with enjoyment although, reading, one longs to see it on the stage where it is meant to be, with commentator, part-speakers, and singers all directed to the avoidance of certain inherent pitfalls in this kind of thing. Attention, San Francisco's Bohemian Club! Isn't this made to order for the Grove?

Pictish problem

The Painted Men. By T. C. Lethbridge. Philosophical Library, New York. 1954. 208 pp., frontis. in color, 14 halftone plates, 19 text figs., endpaper maps. $6.00.

The Problem of the Picts. Edited by F. T. Wainwright. Philosophical Library, New York. 1956. xi + 187 pp., 12 halftone plates, 16 text figs., 7 endpaper and text maps. $6.00.

To your reviewer there is nothing more rewarding than the endless byways of discovery any one reading subject may open up. In *Follow the Whale,* you recall (Reviews, p. 30), Ivan Sanderson has reason to mention the "Black Scots," his own people, whose ancestors are historically recognized as Picts, the name perhaps derived from that by which the Roman conquerors of Britain called certain wild tribesmen troubling them on the northern marches. These "rascals," as T. C. Lethbridge calls them, made a lasting impression on the invaders and therefore on history. It seems they scared the pants off the legionaries by wearing none themselves and nothing, in fact, at all except a macabre blue paint called woad. If, as with so many others all over the English-speaking world, your people came from Northern Ireland, the Scotland of loch and ness, or the seaways and islands between – Skye, the Hebrides – and if you fear not to look into your ancestry, you too may find the subject most intriguing.

You will find first out, from these two books, that the

"Junipero Serra, Founding Father on Foot"

(Continued from page 1)

little lame man who wanted so much to convert his "beloved Indians" to the Holy Faith that no obstacle of nature or man could stop him once his destiny was set in motion. Call it destiny–some believe in divine ordination–or call it sheer determination, the glorious exercise of man's prize faculty, his free will, on the part of one unconquerable soul and mind–whatever moved him, Father Junípero Serra brought European civilization to Alta California. If certain power-political motives of the Spanish Crown had somewhat to do with his being there, of these he was personally innocent (although he obediently recognized the Two Majesties). He is the founder of California and has therefore been officially recognized as one of the Founding Fathers of our nation. More than you dreamed, Miguel José Serre!

D.G.K.

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"problem" to begin with is who *were* the Picts, actually — in fact, to quote Dr. Wainwright, "an extreme form of argument declares that the Picts never existed outside the imagination of Roman panegyrists. If that were so, there would be no Pictish problem. . . ." But there is; and historians generally accept them, problem and all, while archeologists are just getting around to digging for them and identifying certain well known and never buried coastal stone structures with them. (Of the two books, the Lethbridge is more for the general reader, the Wainwright edition a scholarly symposium.)

More "Sagas of Discovery"

Explorations in America Before Columbus. By Hjalmar R. Holand. Twayne Publishers, Inc., New York. 1956. 381 pp., frontis., 34 figs. (halftones, maps, charts, diagrams). $6.00.

Do not expect the history books to be revised forthwith, on the basis of this summary of the results of one man's 48 years of intensive research in a highly speculative field. Time alone will prove Mr. Holand right or wrong in his major premises—the time it may take for the appearance of corroboration sufficient to convince the most die-hard professionals in the evaluation of historical research and historiography. Such corroboration may never appear. The whereabouts of Norse landfalls, possible settlements, and routes of rumored exploration on the American mainland are as difficult—perhaps impossible—to establish beyond all reasonable doubt as the Drake landing-place in California (at least we know Drake did land here!). But we firmly believe it would be utterly wrong for the historians to ignore Mr. Holand's findings. These is too much smoke to have been caused by anything but fire, it seems to us. (See Pre-Discovery for other comments.) D.G.K.

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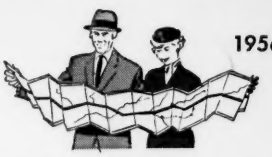

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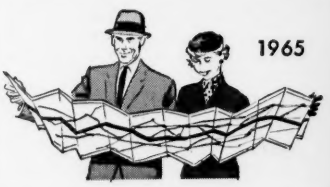

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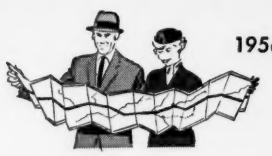

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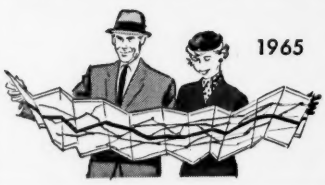

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